

25-07-2023

```
In [2]: import numpy as np
import pandas as pd
```

```
In [93]: a=pd.read_csv(r"C:\Users\user\Downloads\1_fiat500_VehicleSelection_Dataset.csv")
a
```

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon	price	Unnamed: 9	Unnamed: 10
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.611559868	8900	NaN	NaN
1	2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.24188995	8800	NaN	NaN
2	3.0	sport	74.0	4658.0	142228.0	1.0	45.503300	11.41784	4200	NaN	NaN
3	4.0	lounge	51.0	2739.0	160000.0	1.0	40.633171	17.63460922	6000	NaN	NaN
4	5.0	pop	73.0	3074.0	106880.0	1.0	41.903221	12.49565029	5700	NaN	NaN
...
1544	NaN	NaN	NaN	NaN	NaN	NaN	NaN	length	5	NaN	NaN
1545	NaN	NaN	NaN	NaN	NaN	NaN	NaN	concat	lonprice	NaN	NaN
1546	NaN	NaN	NaN	NaN	NaN	NaN	NaN	Null values	NO	NaN	NaN
1547	NaN	NaN	NaN	NaN	NaN	NaN	NaN	find	1	NaN	NaN
1548	NaN	NaN	NaN	NaN	NaN	NaN	NaN	search	1	NaN	NaN

```
In [101]: a=a.head(35)  
a
```

Out[101]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon	price	Unnamed: 9	Unnamed: 10
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242	8.611559868	8900	NaN	NaN
1	2.0	pop	51.0	1186.0	32500.0	1.0	45.666359	12.24188995	8800	NaN	NaN
2	3.0	sport	74.0	4658.0	142228.0	1.0	45.503300	11.41784	4200	NaN	NaN
3	4.0	lounge	51.0	2739.0	160000.0	1.0	40.633171	17.63460922	6000	NaN	NaN
4	5.0	pop	73.0	3074.0	106880.0	1.0	41.903221	12.49565029	5700	NaN	NaN
5	6.0	pop	74.0	3623.0	70225.0	1.0	45.000702	7.68227005	7900	NaN	NaN
6	7.0	lounge	51.0	731.0	11600.0	1.0	44.907242	8.611559868	10750	NaN	NaN
7	8.0	lounge	51.0	1521.0	49076.0	1.0	41.903221	12.49565029	9190	NaN	NaN
8	9.0	sport	73.0	4049.0	76000.0	1.0	45.548000	11.54946995	5600	NaN	NaN
9	10.0	sport	51.0	3653.0	89000.0	1.0	45.438301	10.99170017	6000	NaN	NaN
10	11.0	pop	51.0	790.0	43286.0	1.0	40.871429	14.43896008	8950	NaN	NaN
11	12.0	lounge	51.0	366.0	17500.0	1.0	45.069679	7.704919815	10990	NaN	NaN
12	13.0	lounge	51.0	456.0	18450.0	1.0	45.426571	11.78812981	9700	NaN	NaN
13	14.0	pop	51.0	3835.0	120000.0	1.0	40.531590	17.43615913	4800	NaN	NaN
14	15.0	lounge	51.0	1035.0	40500.0	1.0	40.911362	14.21119976	9300	NaN	NaN
15	16.0	lounge	51.0	1096.0	28200.0	1.0	45.697208	9.845970154	9500	NaN	NaN
16	17.0	lounge	73.0	4200.0	110000.0	1.0	41.082352	14.25424957	5250	NaN	NaN
17	18.0	pop	51.0	2223.0	96848.0	1.0	43.782372	11.25498962	7990	NaN	NaN
18	19.0	lounge	51.0	2861.0	31000.0	1.0	45.069679	7.704919815	7300	NaN	NaN
19	20.0	lounge	51.0	425.0	20030.0	1.0	45.354389	11.86925983	10500	NaN	NaN
20	21.0	lounge	51.0	397.0	19037.0	1.0	45.707249	11.4776001	10500	NaN	NaN
21	22.0	lounge	51.0	1886.0	110000.0	1.0	40.835812	14.50440979	6990	NaN	NaN
22	23.0	lounge	51.0	1035.0	8000.0	1.0	44.506088	12.04417038	10600	NaN	NaN
23	24.0	lounge	51.0	790.0	27595.0	1.0	45.688259	8.731450081	10200	NaN	NaN
24	25.0	lounge	51.0	1583.0	14900.0	1.0	45.069679	7.704919815	9990	NaN	NaN
25	26.0	lounge	51.0	366.0	9218.0	1.0	45.438110	12.31814957	10800	NaN	NaN

	ID	model	engine_power	age_in_days	km	previous_owners	lat	lon	price	Unnamed: 9	Unnamed: 10
26	27.0	pop	51.0	3592.0	124000.0	1.0	40.966179	17.11647987	6800	NaN	NaN
27	28.0	sport	51.0	3531.0	100000.0	1.0	40.976452	14.17228031	4950	NaN	NaN
28	29.0	lounge	51.0	762.0	28900.0	1.0	45.131672	8.449170113	10640	NaN	NaN
29	30.0	lounge	51.0	670.0	4000.0	1.0	41.349751	13.35332012	9500	NaN	NaN
30	31.0	lounge	62.0	2769.0	59216.0	1.0	43.782372	11.25498962	6990	NaN	NaN
31	32.0	lounge	51.0	4169.0	99477.0	2.0	40.550564	14.22562504	5900	NaN	NaN
32	33.0	lounge	51.0	821.0	21730.0	2.0	41.903221	12.49565029	10500	NaN	NaN
33	34.0	sport	51.0	3927.0	140000.0	2.0	40.755932	14.69019032	5200	NaN	NaN
34	35.0	lounge	51.0	640.0	32033.0	2.0	44.283878	11.88813972	9790	NaN	NaN

```
In [102]: a.sum()
```

```
Out[102]: ID 630.0
model loungepopsportloungepoppoplounge loungesportspo...
engine_power 1908.0
age_in_days 70341.0
km 2086429.0
previous_owners 39.0
lat 1522.152607
lon 8.61155986812.2418899511.4178417.6346092212.49...
price 8900880042006000570079001075091905600600089501...
Unnamed: 9 0.0
Unnamed: 10 0
dtype: object
```

```
In [103]: a.mean()
```

```
Out[103]: ID                1.800000e+01  
engine_power            5.451429e+01  
age_in_days            2.009743e+03  
km                    5.961226e+04  
previous_owners        1.114286e+00  
lat                   4.349007e+01  
price                 2.543109e+147  
Unnamed: 9                NaN  
Unnamed: 10               NaN  
dtype: float64
```

```
In [104]: a.count()
```

```
Out[104]: ID                35  
model                  35  
engine_power          35  
age_in_days           35  
km                    35  
previous_owners       35  
lat                   35  
lon                   35  
price                 35  
Unnamed: 9              0  
Unnamed: 10             0  
dtype: int64
```

```
In [105]: a.describe()
```

Out[105]:

	ID	engine_power	age_in_days	km	previous_owners	lat	Unnamed: 9
count	35.000000	35.000000	35.000000	35.000000	35.000000	35.000000	0.0
mean	18.000000	54.514286	2009.742857	59612.257143	1.114286	43.490074	NaN
std	10.246951	8.041698	1435.623135	46097.200412	0.322803	2.064944	NaN
min	1.000000	51.000000	366.000000	4000.000000	1.000000	40.531590	NaN
25%	9.500000	51.000000	776.000000	20880.000000	1.000000	41.029402	NaN
50%	18.000000	51.000000	1521.000000	40500.000000	1.000000	44.506088	NaN
75%	26.500000	51.000000	3561.500000	99738.500000	1.000000	45.390480	NaN
max	35.000000	74.000000	4658.000000	160000.000000	2.000000	45.707249	NaN

```
In [106]: a.mode()
```

Out[106]:

[illegible]

[illegible]

```
In [107]: a.cumsum()
```

Out[107]:

	ID	model	engine_power	age_in_days	km	previous_owners	lat
0	1.0	lounge	51.0	882.0	25000.0	1.0	44.907242
1	3.0	loungepop	102.0	2068.0	57500.0	2.0	90.573601
2	6.0	loungepopsport	176.0	6726.0	199728.0	3.0	136.076900
3	10.0	loungepopsportlounge	227.0	9465.0	359728.0	4.0	176.710072
4	15.0	loungepopsportloungepop	300.0	12539.0	466608.0	5.0	218.613293 8.6115
5	21.0	loungepopsportloungepoppop	374.0	16162.0	536833.0	6.0	263.613995 8.6115
6	28.0	loungepopsportloungepoppoplounge	425.0	16893.0	548433.0	7.0	308.521236 8.6115
7	36.0	loungepopsportloungepoppoplounge	476.0	18414.0	597509.0	8.0	350.424458 8.6115
8	45.0	loungepopsportloungepoppoplounge	549.0	22463.0	673509.0	9.0	395.972458 8.6115
9	55.0	loungepopsportloungepoppoplounge	600.0	26116.0	762509.0	10.0	441.410759 8.6115
10	66.0	loungepopsportloungepoppoplounge	651.0	26906.0	805795.0	11.0	482.282188 8.6115
11	78.0	loungepopsportloungepoppoplounge	702.0	27272.0	823295.0	12.0	527.351868 8.6115
12	91.0	loungepopsportloungepoppoplounge	753.0	27728.0	841745.0	13.0	572.778439 8.6115
13	105.0	loungepopsportloungepoppoplounge	804.0	31563.0	961745.0	14.0	613.310028 8.6115
14	120.0	loungepopsportloungepoppoplounge	855.0	32598.0	1002245.0	15.0	654.221390 8.6115
15	136.0	loungepopsportloungepoppoplounge	906.0	33694.0	1030445.0	16.0	699.918598 8.6115
16	153.0	loungepopsportloungepoppoplounge	979.0	37894.0	1140445.0	17.0	741.000950 8.6115
17	171.0	loungepopsportloungepoppoplounge	1030.0	40117.0	1237293.0	18.0	784.783321 8.6115
18	190.0	loungepopsportloungepoppoplounge	1081.0	42978.0	1268293.0	19.0	829.853001 8.6115
19	210.0	loungepopsportloungepoppoplounge	1132.0	43403.0	1288323.0	20.0	875.207390 8.6115
20	231.0	loungepopsportloungepoppoplounge	1183.0	43800.0	1307360.0	21.0	920.914639 8.6115
21	253.0	loungepopsportloungepoppoplounge	1234.0	45686.0	1417360.0	22.0	961.750450 8.6115
22	276.0	loungepopsportloungepoppoplounge	1285.0	46721.0	1425360.0	23.0	1006.256538 8.6115
23	300.0	loungepopsportloungepoppoplounge	1336.0	47511.0	1452955.0	24.0	1051.944797 8.6115
24	325.0	loungepopsportloungepoppoplounge	1387.0	49094.0	1467855.0	25.0	1097.014477 8.6115
25	351.0	loungepopsportloungepoppoplounge	1438.0	49460.0	1477073.0	26.0	1142.452587 8.6115

	ID	model	engine_power	age_in_days	km	previous_owners	lat
26	378.0	loungepopsportloungepoppoploungeloungesportspo...	1489.0	53052.0	1601073.0	27.0	1183.418766 8.6115
27	406.0	loungepopsportloungepoppoploungeloungesportspo...	1540.0	56583.0	1701073.0	28.0	1224.395218 8.6115
28	435.0	loungepopsportloungepoppoploungeloungesportspo...	1591.0	57345.0	1729973.0	29.0	1269.526890 8.6115
29	465.0	loungepopsportloungepoppoploungeloungesportspo...	1642.0	58015.0	1733973.0	30.0	1310.876640 8.6115
30	496.0	loungepopsportloungepoppoploungeloungesportspo...	1704.0	60784.0	1793189.0	31.0	1354.659012 8.6115
31	528.0	loungepopsportloungepoppoploungeloungesportspo...	1755.0	64953.0	1892666.0	33.0	1395.209576 8.6115
32	561.0	loungepopsportloungepoppoploungeloungesportspo...	1806.0	65774.0	1914396.0	35.0	1437.112797 8.6115
33	595.0	loungepopsportloungepoppoploungeloungesportspo...	1857.0	69701.0	2054396.0	37.0	1477.868729 8.6115
34	630.0	loungepopsportloungepoppoploungeloungesportspo...	1908.0	70341.0	2086429.0	39.0	1522.152607 8.6115

In [108]: a.min()

```
Out[108]: ID                1.0
model                lounge
engine_power         51.0
age_in_days          366.0
km                   4000.0
previous_owners       1.0
lat                  40.53159
lon                  10.99170017
price                 10200
Unnamed: 9            NaN
Unnamed: 10           None
dtype: object
```

```
In [109]: a.max()
```

```
Out[109]: ID                35.0  
          model              sport  
          engine_power      74.0  
          age_in_days       4658.0  
          km                160000.0  
          previous_owners    2.0  
          lat               45.707249  
          lon              9.845970154  
          price              9990  
          Unnamed: 9         NaN  
          Unnamed: 10        None  
          dtype: object
```

```
In [110]: from numpy import cov
```

```
In [111]: cov(a['km'],a['lat'])
```

```
Out[111]: array([[ 2.12495189e+09, -5.26194269e+04],  
                 [-5.26194269e+04,  4.26399476e+00]])
```

```
In [116]: from scipy.stats import pearsonr  
          pearsonr(a['lat'],a['km'])
```

```
Out[116]: (-0.5527938873959319, 0.0005738251669741582)
```

```
In [117]: from scipy.stats import spearmanr  
          spearmanr(a['lon'],a['age_in_days'])
```

```
Out[117]: SpearmanrResult(correlation=-0.06238172756185625, pvalue=0.7218411504826973)
```

```
In [ ]:
```