

```
In [5]: import pandas as pd
```

```
In [4]: data=pd.read_csv("/home/placement/Downloads/fiat500.csv")
```

```
In [3]: data.describe()
```

```
-----  
NameError                                Traceback (most recent call last)  
Cell In[3], line 1  
----> 1 data.describe()  
  
NameError: name 'data' is not defined
```

```
In [4]: data=pd.read_csv("/home/placement/Downloads/fiat500.csv")
```

```
In [5]: data.describe()
```

```
Out[5]:
```

| | ID | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|-------|-------------|--------------|-------------|---------------|-----------------|-------------|-------------|--------------|
| count | 1538.000000 | 1538.000000 | 1538.000000 | 1538.000000 | 1538.000000 | 1538.000000 | 1538.000000 | 1538.000000 |
| mean | 769.500000 | 51.904421 | 1650.980494 | 53396.011704 | 1.123537 | 43.541361 | 11.563428 | 8576.003901 |
| std | 444.126671 | 3.988023 | 1289.522278 | 40046.830723 | 0.416423 | 2.133518 | 2.328190 | 1939.958641 |
| min | 1.000000 | 51.000000 | 366.000000 | 1232.000000 | 1.000000 | 36.855839 | 7.245400 | 2500.000000 |
| 25% | 385.250000 | 51.000000 | 670.000000 | 20006.250000 | 1.000000 | 41.802990 | 9.505090 | 7122.500000 |
| 50% | 769.500000 | 51.000000 | 1035.000000 | 39031.000000 | 1.000000 | 44.394096 | 11.869260 | 9000.000000 |
| 75% | 1153.750000 | 51.000000 | 2616.000000 | 79667.750000 | 1.000000 | 45.467960 | 12.769040 | 10000.000000 |
| max | 1538.000000 | 77.000000 | 4658.000000 | 235000.000000 | 4.000000 | 46.795612 | 18.365520 | 11100.000000 |

```
In [6]: data.head(10)
```

```
Out[6]:
```

| | 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 [7]: data['price'].unique()
```

```
Out[7]: array([ 8900,  8800,  4200,  6000,  5700,  7900, 10750,  9190,  5600,
                8950, 10990,  9700,  4800,  9300,  9500,  5250,  7990,  7300,
                10500,  6990, 10600, 10200,  9990, 10800,  6800,  4950, 10640,
                5900,  5200,  9790,  5000,  8990,  7200,  9950,  9000,  4890,
                10900,  5999, 10400,  7500,  4900,  4300,  6999,  5990,  5500,
                7450,  8250,  9800,  9900,  4490,  7400, 10700,  7800, 10050,
                4799,  8100,  5800,  9390,  7490,  9970,  8980, 10465,  5950,
                8500,  8790, 10000,  9400,  6100,  6500, 10650, 10950, 11000,
                7700,  6300, 10250,  4990,  8200, 10550,  6900,  6700,  9490,
                10279, 11090,  8000,  5400,  8700, 10280,  4500,  4250,  9450,
                9590,  9600,  5399, 10670,  5300, 10850,  7600,  5100,  6600,
                9435, 10300,  4390,  8390, 10470,  3390,  9980,  9850,  5490,
                7950,  9750,  4600, 10999,  9100,  6200,  8400,  8750,  8290,
                7100,  9999,  8999,  5699,  8579,  6350,  8600,  9979,  8580,
                9499, 10450, 10590,  4690,  6599,  4400,  9200,  8850,  4700,
                8350,  6490,  7999,  8899,  7000,  6400,  8300,  4450, 10490,
                8499, 10499,  9480,  5850,  7480,  6290,  8450,  4299,  4399,
                10790,  7590,  9899,  9840,  9890,  4790,  9290,  6699,  4999,
                11100,  8650,  5499,  5880,  6499, 10870, 10690,  7495,  5799,
                10100,  5450, 10350,  3990,  8190,  6190, 10390,  7390,  7790,
                10399,  3500,  3600,  8399,  6890,  2500,  7190,  7380,  3900,
                9780,  9879,  7699,  9550,  7885, 10180,  3800,  9699,  7479,
                5790,  6250,  7350,  9299,  8490,  8799, 10890,  7799,  3950,
                6790,  4000,  5550,  6450,  9690,  6799,  2900,  6950,  5199,
                8890,  8979,  3850,  5290,  4100,  4750])
```

```
In [8]: list(data.columns)
```

```
Out[8]: ['ID',
         'model',
         'engine_power',
         'age_in_days',
         'km',
         'previous_owners',
         'lat',
         'lon',
         'price']
```

```
In [9]: data.groupby(['engine_power']).count()
```

```
Out[9]:
```

| | ID | model | age_in_days | km | previous_owners | lat | lon | price |
|---------------------|------|-------|-------------|------|-----------------|------|------|-------|
| engine_power | | | | | | | | |
| 51 | 1453 | 1453 | 1453 | 1453 | 1453 | 1453 | 1453 | 1453 |
| 58 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 62 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 |
| 63 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 66 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 73 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| 74 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| 77 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

```
In [10]: data.groupby(['model']).count()
```

```
Out[10]:
```

| | ID | engine_power | age_in_days | km | previous_owners | lat | lon | price |
|--------------|------|--------------|-------------|------|-----------------|------|------|-------|
| model | | | | | | | | |
| lounge | 1094 | 1094 | 1094 | 1094 | 1094 | 1094 | 1094 | 1094 |
| pop | 358 | 358 | 358 | 358 | 358 | 358 | 358 | 358 |
| sport | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |

```
In [11]: data1=data.drop(['lat','ID'],axis=1)
```

```
In [12]: data.head(5)
```

```
Out[12]:
```

| | 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 |

```
In [13]: data1.head(5)
```

```
Out[13]:
```

| | model | engine_power | age_in_days | km | previous_owners | lon | price |
|---|--------|--------------|-------------|--------|-----------------|-----------|-------|
| 0 | lounge | 51 | 882 | 25000 | 1 | 8.611560 | 8900 |
| 1 | pop | 51 | 1186 | 32500 | 1 | 12.241890 | 8800 |
| 2 | sport | 74 | 4658 | 142228 | 1 | 11.417840 | 4200 |
| 3 | lounge | 51 | 2739 | 160000 | 1 | 17.634609 | 6000 |
| 4 | pop | 73 | 3074 | 106880 | 1 | 12.495650 | 5700 |

```
In [14]: data['price'].sum()
```

```
Out[14]: 13189894
```

```
In [15]: data2=data.loc[(data.model=='lounge')]
data2
```

```
Out[15]:
```

| | 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 |
| 3 | 4 | lounge | 51 | 2739 | 160000 | 1 | 40.633171 | 17.634609 | 6000 |
| 6 | 7 | lounge | 51 | 731 | 11600 | 1 | 44.907242 | 8.611560 | 10750 |
| 7 | 8 | lounge | 51 | 1521 | 49076 | 1 | 41.903221 | 12.495650 | 9190 |
| 11 | 12 | lounge | 51 | 366 | 17500 | 1 | 45.069679 | 7.704920 | 10990 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1528 | 1529 | lounge | 51 | 2861 | 126000 | 1 | 43.841980 | 10.515310 | 5500 |
| 1529 | 1530 | lounge | 51 | 731 | 22551 | 1 | 38.122070 | 13.361120 | 9900 |
| 1530 | 1531 | lounge | 51 | 670 | 29000 | 1 | 45.764648 | 8.994500 | 10800 |
| 1534 | 1535 | lounge | 74 | 3835 | 112000 | 1 | 45.845692 | 8.666870 | 4600 |
| 1536 | 1537 | lounge | 51 | 2557 | 80750 | 1 | 45.000702 | 7.682270 | 5990 |

1094 rows × 9 columns

```
In [16]: data3=data.loc[(data.km>=35000)]
```

```
In [17]: data3
```

```
Out[17]:
```

| | ID | model | engine_power | age_in_days | km | previous_owners | lat | lon | price | |
|------|------|--------|--------------|-------------|--------|-----------------|-----------|-----------|-----------|------|
| | 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 |
| | 7 | 8 | lounge | 51 | 1521 | 49076 | 1 | 41.903221 | 12.495650 | 9190 |
| | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 1533 | 1534 | sport | 51 | 3712 | 115280 | 1 | 45.069679 | 7.704920 | 5200 | |
| 1534 | 1535 | lounge | 74 | 3835 | 112000 | 1 | 45.845692 | 8.666870 | 4600 | |
| 1535 | 1536 | pop | 51 | 2223 | 60457 | 1 | 45.481541 | 9.413480 | 7500 | |
| 1536 | 1537 | lounge | 51 | 2557 | 80750 | 1 | 45.000702 | 7.682270 | 5990 | |
| 1537 | 1538 | pop | 51 | 1766 | 54276 | 1 | 40.323410 | 17.568270 | 7900 | |

849 rows × 9 columns

```
In [18]: data2=data.loc[(data.model=='pop')&(data.previous_owners==1)]
data2
```

```
Out[18]:
```

| | ID | model | engine_power | age_in_days | km | previous_owners | lat | lon | price | |
|--|------|-------|--------------|-------------|------|-----------------|-----|-----------|-----------|------|
| | 1 | 2 | pop | 51 | 1186 | 32500 | 1 | 45.666359 | 12.241890 | 8800 |
| | 4 | 5 | pop | 73 | 3074 | 106880 | 1 | 41.903221 | 12.495650 | 5700 |
| | 5 | 6 | pop | 74 | 3623 | 70225 | 1 | 45.000702 | 7.682270 | 7900 |
| | 10 | 11 | pop | 51 | 790 | 43286 | 1 | 40.871429 | 14.438960 | 8950 |
| | 13 | 14 | pop | 51 | 3835 | 120000 | 1 | 40.531590 | 17.436159 | 4800 |
| | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| | 1524 | 1525 | pop | 51 | 2192 | 53300 | 1 | 40.609531 | 14.980930 | 7900 |
| | 1527 | 1528 | pop | 51 | 517 | 3000 | 1 | 40.748241 | 14.528350 | 9999 |
| | 1532 | 1533 | pop | 51 | 1917 | 52008 | 1 | 45.548000 | 11.549470 | 9900 |
| | 1535 | 1536 | pop | 51 | 2223 | 60457 | 1 | 45.481541 | 9.413480 | 7500 |
| | 1537 | 1538 | pop | 51 | 1766 | 54276 | 1 | 40.323410 | 17.568270 | 7900 |

327 rows × 9 columns

```
In [19]: data.price.sort_values(ascending=false)
```

```
-----
NameError                                Traceback (most recent call last)
Cell In[19], line 1
----> 1 data.price.sort_values(ascending=false)

NameError: name 'false' is not defined
```



```
In [20]: data.loc[(data.model=='longue')\ (data.model=='pop')]
```

```
Cell In[20], line 1
```

```
data.loc[(data.model=='longue')\ (data.model=='pop')]
```

```
SyntaxError: unexpected character after line continuation character
```

```
In [21]: data2=data.loc[(data.model=='longue')\ (data.model=='pop')]
```

```
Cell In[21], line 1
```

```
data2=data.loc[(data.model=='longue')\ (data.model=='pop')]
```

```
SyntaxError: unexpected character after line continuation character
```

```
In [22]: data2=data.loc[(data.model=='longue') | (data.model=='pop')]
```

```
In [23]: data2=data.loc[(data.model=='longue') | (data.model=='pop')]
```

```
In [6]: data1=data.drop(['model'],axis=1)
```

```
In [7]: cor=data1.corr()  
cor
```

```
Out[7]:
```

| | 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 [8]: data['previous_owners'].unique()
```

```
Out[8]: array([1, 2, 3, 4])
```

```
In [9]: list(data.columns)
```

```
Out[9]: ['ID',  
         'model',  
         'engine_power',  
         'age_in_days',  
         'km',  
         'previous_owners',  
         'lat',  
         'lon',  
         'price']
```

```
In [ ]:
```

