

- Output:

```
PS D:\VM_045\py> & C:/Users/mtcs_45/AppData/Local/Programs/Python/Python310/python.exe d:/VM_045/py/101ctmtcs2122045_carpreproc.py
car
0
price
0
body
0
mileage
0
engV
434
engType
0
registration
0
year
0
model
0
drive
511
dtype: int64
```

clean data:

	car	price	body	mileage	engV	engType	registration	year	model	drive
0	Ford	15500.000000	crossover	68.000000	2.500000	Gas	yes	2010	Kuga	full
1	Mercedes-Benz	20500.000000	sedan	173.000000	1.800000	Gas	yes	2011	E-Class	rear
2	Mercedes-Benz	35000.000000	other	135.000000	5.500000	Petrol	yes	2008	CL 550	rear
3	Mercedes-Benz	17800.000000	van	162.000000	1.800000	Diesel	yes	2012	B 180	front
5	Nissan	16600.000000	crossover	83.000000	2.000000	Petrol	yes	2013	X-Trail	full
6	Honda	6500.000000	sedan	199.000000	2.000000	Petrol	yes	2003	Accord	front
7	Renault	10500.000000	vagon	185.000000	1.500000	Diesel	yes	2011	Megane	front
8	Mercedes-Benz	21500.000000	sedan	146.000000	1.800000	Gas	yes	2012	E-Class	rear
9	Mercedes-Benz	22700.000000	sedan	125.000000	2.200000	Diesel	yes	2010	E-Class	rear
10	Nissan	20447.154000	crossover	144.568958	1.200000	Petrol	yes	2016	Qashqai	front
11	Mercedes-Benz	20400.000000	sedan	190.000000	1.800000	Gas	yes	2011	E-Class	rear
12	Mercedes-Benz	22500.000000	sedan	164.000000	1.800000	Gas	yes	2012	E-Class	rear
13	BMW	4700.000000	sedan	200.000000	2.588607	Petrol	yes	1996	316	rear
14	Mercedes-Benz	21500.000000	sedan	159.000000	1.800000	Gas	yes	2012	E-Class	rear
15	BMW	19999.000000	sedan	290.000000	4.800000	Petrol	yes	2006	750	rear
16	BMW	129222.000000	sedan	2.000000	5.000000	Petrol	yes	2016	750	full
17	Mercedes-Benz	99999.000000	crossover	144.568958	3.000000	Petrol	yes	2016	GLE-Class	full
18	Nissan	16600.000000	crossover	83.000000	2.000000	Petrol	yes	2013	X-Trail	full
19	BMW	73900.000000	sedan	57.000000	4.400000	Petrol	yes	2013	M5	rear
20	Land Rover	16229.235289	crossover	144.568958	4.400000	Diesel	yes	2016	Range Rover	full
count	9065	9065.000000	9065	9065.000000	9065.000000	9065	9065	9065.000000	9065	9065
unique	83	NaN	6	NaN	NaN	4	2	NaN	863	3
top	Volkswagen	NaN	sedan	NaN	NaN	Petrol	yes	NaN	E-Class	front
freq	879	NaN	3444	NaN	NaN	4181	8542	NaN	185	5188
mean	NaN	16229.235289	NaN	144.568958	2.588607	NaN	NaN	2006.638941	NaN	NaN
std	NaN	24202.479898	NaN	94.391987	5.318369	NaN	NaN	7.001318	NaN	NaN
min	NaN	259.350000	NaN	1.000000	0.100000	NaN	NaN	1953.000000	NaN	NaN
25%	NaN	5500.000000	NaN	80.000000	1.600000	NaN	NaN	2004.000000	NaN	NaN
50%	NaN	9900.000000	NaN	136.000000	2.000000	NaN	NaN	2008.000000	NaN	NaN
75%	NaN	16800.000000	NaN	195.000000	2.588607	NaN	NaN	2012.000000	NaN	NaN
max	NaN	547800.000000	NaN	999.000000	99.990000	NaN	NaN	2016.000000	NaN	NaN

categorical data:

	car	price	body	mileage	engV	engType	registration	year	model	drive
0	23	15500.000000	0	68.000000	2.500000	1	1	2010	481	full
1	50	20500.000000	3	173.000000	1.800000	1	1	2011	328	rear
2	50	35000.000000	2	135.000000	5.500000	3	1	2008	238	rear
3	50	17800.000000	5	162.000000	1.800000	0	1	2012	205	front
5	55	16600.000000	0	83.000000	2.000000	3	1	2013	829	full
6	30	6500.000000	3	199.000000	2.000000	3	1	2003	177	front
7	59	10500.000000	4	185.000000	1.500000	0	1	2011	550	front
8	50	21500.000000	3	146.000000	1.800000	1	1	2012	328	rear
9	50	22700.000000	3	125.000000	2.200000	0	1	2010	328	rear
10	55	20447.154000	0	144.568958	1.200000	3	1	2016	639	front
11	50	20400.000000	3	190.000000	1.800000	1	1	2011	328	rear
12	50	22500.000000	3	164.000000	1.800000	1	1	2012	328	rear
13	5	4700.000000	3	200.000000	2.588607	3	1	1996	83	rear
14	50	21500.000000	3	159.000000	1.800000	1	1	2012	328	rear
15	5	19999.000000	3	290.000000	4.800000	3	1	2006	148	rear
16	5	129222.000000	3	2.000000	5.000000	3	1	2016	148	full
17	50	99999.000000	0	144.568958	3.000000	3	1	2016	395	full
18	55	16600.000000	0	83.000000	2.000000	3	1	2013	829	full
19	5	73900.000000	3	57.000000	4.400000	3	1	2013	521	rear
20	42	16229.235289	0	144.568958	4.400000	0	1	2016	656	full

```
x:
      car  body  mileage  engV  engType  registration  year  model  drive
0       23    0    68.0    2.5      1           1  2010   481  full
1       50    3   173.0    1.8      1           1  2011   328  rear
2       50    2   135.0    5.5      3           1  2008   238  rear
3       50    5   162.0    1.8      0           1  2012   205  front
5       55    0    83.0    2.0      3           1  2013   829  full
...     ...   ...     ...     ...     ...     ...   ...   ...
9571    33    0   140.0    2.0      1           1  2011   804  front
9572    77    4   150.0    1.6      3           1  1986   600  front
9573    50    0   180.0    3.5      3           1  2008   532  full
9574    43    3   150.0    3.5      1           1  2008   333  front
9575     4    2    71.0    3.6      3           1  2007   633  full
```

[9065 rows x 9 columns]

```
y:
      price
0   15500.0
1   20500.0
2   35000.0
3   17800.0
5   16600.0
...     ...
9571 14500.0
9572  2200.0
9573 18500.0
9574 16999.0
9575 22500.0
```

[9065 rows x 1 columns]

splitting the dataset into the training set and test set:

```
      car  body  mileage  engV  engType  registration  year  model  drive
2967    23    1    71.0    1.0      3           1  2013   364  front
9494    23    1    70.0    1.6      3           1  2006   369  front
1605    58    0   115.0    4.8      3           1  2010   276  full
9221    59    4   100.0    1.5      0           1  2009   474  front
5785    55    5    90.0    1.6      1           1  2008   574  front
...     ...   ...     ...     ...     ...     ...   ...   ...
3046     5    0   200.0    3.0      0           1  2009   833  full
8243    56    4   290.0    1.4      3           1  1994   192  front
947     77    3    87.0    1.6      3           1  2011   618  front
5476    33    0    90.0    2.7      1           1  2008   710  full
2959   7300.000000
2474   7900.000000
5256 16229.235289
8328   7200.000000
...     ...
2119 43900.000000
1028 16229.235289
6161  4300.000000
7144 3899.000000
762   4200.000000
```

[1813 rows x 1 columns]