CAR RESALE VALUE PREDICTION

Team id	PNT2022TMID51364
<u>Date</u>	4 November 2022

Reading and Understanding Data

```
df = pd.read_csv('ibm_car_details2.csv')
df.head()
```

	name	year	selling_price	km_driven	fuel	seller_type	transmission	owner	mileage	engine	max_power	torque	seats
0	Maruti Swift Dzire VDI	2014	450000	145500	Diesel	Individual	Manual	First Owner	23.4 kmpl	1248 CC	74 bhp	190Nm@ 2000rpm	5.0
1	Skoda Rapid 1.5 TDI Ambition	2014	370000	120000	Diesel	Individual	Manual	Second Owner	21.14 kmpl	1498 CC	103.52 bhp	250Nm@ 1500-2500rpm	5.0
2	Honda City 2017-2020 EXi	2006	158000	140000	Petrol	Individual	Manual	Third Owner	17.7 kmpl	1497 CC	78 bhp	12.7@ 2,700(kgm@ rpm)	5.0
3	Hyundai i20 Sportz Diesel	2010	225000	127000	Diesel	Individual	Manual	First Owner	23.0 kmpl	1396 CC	90 bhp	22.4 kgm at 1750-2750rpm	5.0
4	Maruti Swift VXI BSIII	2007	130000	120000	Petrol	Individual	Manual	First Owner	16.1 kmpl	1298 CC	88.2 bhp	11.5@ 4,500(kgm@ rpm)	5.0

df.shape

(8128, 13)

df.info

```
<bound method DataFrame.info of</pre>
                                                            name year selling_price km_driven
                                                                                                 fuel \
          Maruti Swift Dzire VDI 2014
                                               450000
                                                          145500 Diesel
     Skoda Rapid 1.5 TDI Ambition
                                               370000
                                                          120000
                                                                 Diesel
        Honda City 2017-2020 EXi
                                   2006
                                               158000
                                                          140000 Petrol
        Hyundai i20 Sportz Diesel
                                   2010
                                               225000
                                                          127000 Diesel
3
4
           Maruti Swift VXI BSIII
                                   2007
                                               130000
                                                          120000 Petrol
8123
                Hyundai i20 Magna
                                   2013
                                               320000
                                                          110000 Petrol
           Hyundai Verna CRDi SX
                                   2007
                                               135000
                                                          119000 Diesel
8124
                                               382000
                                                          120000 Diesel
           Maruti Swift Dzire ZDi
                                   2009
8125
8126
                  Tata Indigo CR4 2013
                                               290000
                                                           25000 Diesel
8127
                  Tata Indigo CR4 2013
                                               290000
                                                           25000 Diesel
                                                      mileage
                                                                engine
    seller_type transmission
                                            owner
                                      First Owner
a
     Individual
                      Manual
                                                   23.4 kmpl 1248 CC
1
      Individual
                      Manual
                                      Second Owner
                                                   21.14 kmpl
                                                               1498 CC
      Individual
                      Manual
                                      Third Owner
                                                   17.7 kmpl 1497 CC
      Individual
                      Manual
                                      First Owner
                                                    23.0 kmpl
                                                               1396 CC
     Individual
                                      First Owner
                      Manual
                                                    16.1 kmpl 1298 CC
4
8123 Individual
                      Manual
                                      First Owner
                                                    18.5 kmpl
                                                               1197 CC
8124 Individual
                      Manual Fourth & Above Owner
                                                   16.8 kmpl
8125 Individual
                      Manual
                                      First Owner
                                                    19.3 kmpl
                                                   23.57 kmpl 1396 CC
8126 Individual
                      Manual
                                      First Owner
8127 Individual
                      Manual
                                      First Owner 23.57 kmpl 1396 CC
```

CAR RESALE VALUE PREDICTION

```
max power
                                      torque seats
0
          74 bhp
                              190Nm@ 2000rpm
                                                 5.0
      103.52 bhp
                         250Nm@ 1500-2500rpm
1
                                                 5.0
2
          78 bhp
                     12.7@ 2,700(kgm@ rpm)
                                                 5.0
3
                   22.4 kgm at 1750-2750rpm
          90 bhp
                                                5.0
4
        88.2 bhp
                     11.5@ 4,500(kgm@ rpm)
                                                5.0
             . . .
                                                 . . .
. . .
       82.85 bhp
                            113.7Nm@ 4000rpm
8123
                                                 5.0
8124
       110 bhp
                  24@ 1,900-2,750(kgm@ rpm)
                                                 5.0
                              190Nm@ 2000rpm
8125
       73.9 bhp
                                                 5.0
8126
         70 bhp
                         140Nm@ 1800-3000rpm
                                                 5.0
          70 bhp
8127
                         140Nm@ 1800-3000rpm
                                                 5.0
```

[8128 rows x 13 columns]>

df.describe

```
<bound method NDFrame.describe of</pre>
                                                        name year selling_price km_driven
                                                                                           fuel \
          Maruti Swift Dzire VDI 2014
                                           450000
                                                     145500 Diesel
     Skoda Rapid 1.5 TDI Ambition 2014
1
                                           370000
                                                     120000 Diesel
2
        Honda City 2017-2020 EXi
                               2006
                                           158000
                                                     140000 Petrol
       Hyundai i20 Sportz Diesel
                               2010
                                           225000
                                                     127000 Diesel
4
          Maruti Swift VXI BSIII
                               2007
                                           130000
                                                     120000
                                                            Petrol
                                           320000
8123
              Hyundai i20 Magna
                               2013
                                                     110000
                                                            Petrol
         Hyundai Verna CRDi SX 2007
8124
                                           135000
                                                     119000 Diesel
8125
          Maruti Swift Dzire ZDi
                               2009
                                           382000
                                                     120000
                                                           Diesel
                Tata Indigo CR4 2013
8126
                                           290000
                                                     25000 Diesel
                Tata Indigo CR4 2013
                                           290000
                                                     25000 Diesel
8127
                                                mileage
    seller_type transmission
                                        owner
                                                         engine
                                  First Owner
                                               23.4 kmpl 1248 CC
0
    Individual
                   Manual
1
     Individual
                    Manual
                                  Second Owner 21.14 kmpl
                                                         1498 CC
2
     Individual
                   Manual
                                   Third Owner
                                               17.7 kmpl
                                                         1497 CC
     Individual
                   Manual
                                   First Owner
                                               23.0 kmpl 1396 CC
4
     Individual
                   Manual
                                   First Owner
                                               16.1 kmpl 1298 CC
                                               18.5 kmpl
8123 Individual
                   Manual
                                   First Owner
                                                         1197 CC
8124 Individual
                   Manual Fourth & Above Owner
                                               16.8 kmpl
                                                         1493 CC
8125 Individual
                   Manual
                                   First Owner
                                               19.3 kmpl
8126 Individual
                   Manual
                                   First Owner 23.57 kmpl 1396 CC
8127 Individual
                   Manual
                                   First Owner 23.57 kmpl 1396 CC
        max power
                                              torque seats
0
            74 bhp
                                    190Nm@ 2000rpm
                                                          5.0
       103.52 bhp
                              250Nm@ 1500-2500rpm
                                                          5.0
1
2
            78 bhp
                           12.7@ 2,700(kgm@ rpm)
                                                          5.0
            90 bhp
3
                      22.4 kgm at 1750-2750rpm
                                                          5.0
        88.2 bhp
                          11.5@ 4,500(kgm@ rpm)
                                                          5.0
                                                          ...
       82.85 bhp
                                 113.7Nm@ 4000rpm
8123
                                                          5.0
8124
         110 bhp 24@ 1,900-2,750(kgm@ rpm)
                                                          5.0
8125
         73.9 bhp
                                   190Nm@ 2000rpm
                                                          5.0
8126
           70 bhp
                             140Nm@ 1800-3000rpm
                                                          5.0
           70 bhp
                             140Nm@ 1800-3000rpm
                                                          5.0
8127
```

[8128 rows x 13 columns]>

df.isna().sum()

CAR RESALE VALUE PREDICTION

name	0
year	0
selling_price	0
km_driven	0
fuel	0
seller_type	0
transmission	0
owner	0
mileage	221
engine	221
max_power	215
torque	222
seats	221
dtype: int64	