# cars-dataset-analysis

January 30, 2024

### 0.1 Working on Real Project with Python

#### 0.1.1 Cars Dataset

Here, the data of different cars is given with their specifications. This data is available as acsy file. We are going to analyze this data set using the Pandas DataFrame.

```
[1]: import pandas as pd
[8]:
     car = pd.read_csv("D:/data analystics/Python for data analytics/Python Projects/
       ⇔Cars Dataset Analysis Project/file.csv")
[9]:
     car.head()
[9]:
         Make
                          Model
                                  Type Origin DriveTrain
                                                                 MSRP
                                                                         Invoice
        Acura
                            MDX
                                          Asia
                                                             $36,945
                                                                        $33,337
     0
                                                       All
                RSX Type S 2dr
                                 Sedan
                                                             $23,820
                                                                        $21,761
     1
        Acura
                                          Asia
                                                     Front
                                                             $26,990
                                                                        $24,647
     2
        Acura
                        TSX 4dr
                                 Sedan
                                          Asia
                                                     Front
     3
                        TL 4dr
                                                             $33,195
                                                                        $30,299
        Acura
                                 Sedan
                                          Asia
                                                     Front
                    3.5 RL 4dr
                                                             $43,755
                                                                        $39,014
        Acura
                                 Sedan
                                          Asia
                                                     Front
        EngineSize
                     Cylinders
                                 Horsepower
                                              MPG_City
                                                         MPG_Highway
                                                                        Weight
     0
                3.5
                            6.0
                                         265
                                                     17
                                                                   23
                                                                          4451
     1
                2.0
                            4.0
                                         200
                                                     24
                                                                   31
                                                                          2778
                2.4
                            4.0
                                                                          3230
     2
                                         200
                                                     22
                                                                   29
     3
                3.2
                            6.0
                                         270
                                                     20
                                                                   28
                                                                          3575
     4
                3.5
                            6.0
                                         225
                                                                   24
                                                     18
                                                                          3880
        Wheelbase
                    Length
     0
               106
                        189
     1
               101
                        172
     2
               105
                        183
     3
               108
                        186
     4
               115
                       197
```

[10]: car.shape

[10]: (428, 15)

0.1.2 Question.1. Find all Null values in dataset. IF there is any Null Values in any column, then fill it with mean of that column

```
car.isnull().sum()
[11]:
[11]: Make
      Model
                      0
      Туре
                      0
      Origin
                      0
      DriveTrain
                      0
      MSRP
                      0
      Invoice
                      0
      EngineSize
                      0
      Cylinders
                      2
      Horsepower
                      0
      MPG_City
                      0
      MPG_Highway
                      0
      Weight
                      0
      Wheelbase
                      0
      Length
                      0
      dtype: int64
[13]: car['Cylinders'].fillna(car['Cylinders'].mean(), inplace= True)
```

0.1.3 Question.2. Check what are the different types of Make are there in our Dataset. And, What is the count (Occurence) of each Make in the Data?

```
[14]: car['Make'].value_counts()
[14]: Make
      Toyota
                        28
      Chevrolet
                        27
      Mercedes-Benz
                        26
      Ford
                        23
      BMW
                        20
      Audi
                        19
      Honda
                        17
                        17
      Nissan
      Volkswagen
                        15
      Chrysler
                        15
      Dodge
                        13
      Mitsubishi
                        13
      Volvo
                        12
      Jaguar
                        12
      Hyundai
                        12
      Subaru
                        11
      Pontiac
                        11
```

Mazda	11
Lexus	11
Kia	11
Buick	9
Mercury	9
Lincoln	9
Saturn	8
Cadillac	8
Suzuki	8
Infiniti	8
GMC	8
Acura	7
Porsche	7
Saab	7
Land Rover	3
Oldsmobile	3
Jeep	3
Scion	2
Isuzu	2
MINI	2
Hummer	1

Name: count, dtype: int64

## 0.1.4 Question.3. Show all the Records where Orgin is Asia or Europe

		PT conve PT conve	TL 3.5 RL  rtible	4dr 4dr 4dr  2dr 2dr	SUV Sedan Sedan Sedan Sedan  Sedan Sedan	Asia Asia Asia Asia Asia Europe	Front	\$36,945 \$23,820 \$26,990 \$33,195 \$43,755 \$40,565 \$42,565	
Acura Acura Acura Volvo Volvo Volvo		PT conve PT conve	TSX TL 3.5 RL  rtible	4dr 4dr 4dr  2dr 2dr	Sedan Sedan Sedan  Sedan	Asia Asia Asia Europe	Front Front Front Front	\$26,990 \$33,195 \$43,755 \$40,565	
Acura Acura  Volvo Volvo Volvo		PT conve PT conve	TL 3.5 RL  ertible ertible	4dr 4dr  2dr 2dr	Sedan Sedan  Sedan	Asia Asia  Europe	Front Front  Front	\$33,195 \$43,755 \$40,565	
Acura  Volvo Volvo Volvo		PT conve PT conve	3.5 RL  ertible ertible	4dr  2dr 2dr	Sedan  Sedan	Asia  Europe	Front  Front	\$43,755 \$40,565	
 Volvo Volvo Volvo		PT conve PT conve	 ertible ertible	 2dr 2dr	 Sedan	Europe	 Front	\$40,565	
Volvo Volvo Volvo		PT conve	rtible	2dr		Europe	Front	=	
Volvo Volvo		PT conve	rtible	2dr		-		=	
Volvo	C70 HI				Sedan	Europe	Front	\$42,565	
			S80 T6						
Volvo			500 10	4dr	Sedan	Europe	Front	\$45,210	
				V40	Wagon	Europe	Front	\$26,135	
Volvo				XC70	Wagon	Europe	All	\$35,145	
Invoic	e Eng	gineSize	Cyli	nders	Horse	power N	MPG_City ME	PG_Highway	\
\$33,337	•	3.5	•	6.0		265	17	23	
\$21,761		2.0	)	4.0		200	24	31	
\$24,647	•	2.4	:	4.0		200	22	29	
\$30,299	)	3.2	!	6.0		270	20	28	
\$39,014	Ŀ	3.5		6.0		225	18	24	
47	\$33,337 \$21,761 \$24,647 \$30,299	\$33,337 \$21,761 \$24,647 \$30,299	\$33,337 3.5 \$21,761 2.0 \$24,647 2.4 \$30,299 3.2	\$33,337 3.5 \$21,761 2.0 \$24,647 2.4 \$30,299 3.2	\$33,337 3.5 6.0 \$21,761 2.0 4.0 \$24,647 2.4 4.0 \$30,299 3.2 6.0	\$33,337 3.5 6.0 \$21,761 2.0 4.0 \$24,647 2.4 4.0 \$30,299 3.2 6.0	\$33,337       3.5       6.0       265         \$21,761       2.0       4.0       200         \$24,647       2.4       4.0       200         \$30,299       3.2       6.0       270	\$33,337 3.5 6.0 265 17 \$21,761 2.0 4.0 200 24 \$24,647 2.4 4.0 200 22 \$30,299 3.2 6.0 270 20	\$33,337       3.5       6.0       265       17       23         \$21,761       2.0       4.0       200       24       31         \$24,647       2.4       4.0       200       22       29         \$30,299       3.2       6.0       270       20       28

423	\$38,203	2.4	5.0	197	21	28
424	\$40,083	2.3	5.0	242	20	26
425	\$42,573	2.9	6.0	268	19	26
426	\$24,641	1.9	4.0	170	22	29
427	\$33,112	2.5	5.0	208	20	27

	Weight	Wheelbase	Length
0	4451	106	189
1	2778	101	172
2	3230	105	183
3	3575	108	186
4	3880	115	197
	•••	•••	•••
423	3450	105	186
424	3450	105	186
425	3653	110	190
426	2822	101	180
427	3823	109	186

[281 rows x 15 columns]

### 0.1.5 Question.4. Remove all the records (rows) where Weight is above 4000.

```
[19]: car.shape
```

[19]: (428, 15)

```
[24]: car = car[~(car['Weight'] > 4000)]
```

```
[25]: car.shape
```

[25]: (325, 15)

### 0.1.6 Question.5. Increase all the Values og 'MPG\_City' Column by 3.

```
[26]: car['MPG_City'] = car['MPG_City'].apply(lambda x:x +3)
```

C:\Users\Hxtreme\AppData\Local\Temp\ipykernel\_13016\2093516831.py:1:
SettingWithCopyWarning:

A value is trying to be set on a copy of a slice from a DataFrame. Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy car['MPG\_City'] = car['MPG\_City'].apply(lambda x:x +3)

[27]:	car													
[27]:		Make			Model	Туре	Origin	n DriveTra	in	MSRP	\			
	1	Acura	R	SX Typ	e S 2dr	Sedan	_			\$23,820				
	2	Acura			TSX 4dr	Sedan	Asia	a Fro	nt	\$26,990				
	3	Acura			TL 4dr	Sedan	Asia	a Fro	nt	\$33,195				
	4	Acura		3.5	RL 4dr	Sedan	Asia	a Fro	nt	\$43,755				
	5	Acura	3.5 RL w/N	avigat	ion 4dr	Sedan	Asia	a Fro	nt	\$46,100				
	423	Volvo	C70 LPT co	nverti	ble 2dr	Sedan	Europe	e Fro	nt	\$40,565				
	424	Volvo	C70 HPT co	nverti	ble 2dr	Sedan	Europe	e Fro	nt	\$42,565				
	425	Volvo		S80	T6 4dr	Sedan	Europe	e Fro	nt	\$45,210				
	426	Volvo			V40	Wagon	Europe	e Fro	nt	\$26,135				
	427	Volvo			XC70	Wagon	Europe	e A	.11	\$35,145				
											,			
		Invoid	_		ylinder		epower	•	MP	G_Highway	\			
	1	\$21,761		2.0	4.0		200	27		31				
	2	\$24,647		2.4	4.0		200	25		29				
	3	\$30,299		3.2	6.0		270	23		28				
	4	\$39,014		3.5	6.0		225	21		24				
	5	\$41,100	)	3.5	6.0	)	225	21		24				
	• •		•••		•••	•••	•••	•••						
	423	\$38,203		2.4	5.0		197	24		28				
	424	\$40,083		2.3	5.0		242	23		26				
	425	\$42,573		2.9	6.0		268	22		26				
	426	\$24,641	-	1.9	4.0	)	170	25		29				
	427	\$33,112	2	2.5	5.0	)	208	23		27				
		Weight Wheelbase Length												
	1	2778	101		72									
	2	3230	101		83									
	3	3575	103		86									
	4	3880	115		97									
	5	3893	115		97									
			115		91									
	402	 2450	 10E		06									
	423	3450	105		86 86									
	424	3450	105		86									
	425	3653	110	1	90									

[325 rows x 15 columns]