

## ***Import library and Read Csv File***

```
import pandas as pd
import numpy as np

car = pd.read_csv(r"C:\Users\Ashish\OneDrive\Pyhton Project file ALL\
Project 2 - Car Dataset.csv")

car.head(2)
```

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice
0	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761

  

	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

  

	Wheelbase	Length
0	106	189
1	101	172

## ***Find all the Null Value and fill it with the MEAN of that coloumn!!***

```
car.isnull().sum()
```

```
Make          0
Model         0
Type          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
```

```
car["Cylinders"].fillna(car["Cylinders"].mean(), inplace = True)
car.isnull().sum()
```

C:\Users\Ashish\AppData\Local\Temp\ipykernel\_26596\3393790091.py:1:  
FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace method.  
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting values always behaves as a copy.

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value) instead, to perform the operation inplace on the original object.

```
car["Cylinders"].fillna(car["Cylinders"].mean(), inplace = True)
```

Make	0
Model	0
Type	0
Origin	0
DriveTrain	0
MSRP	0
Invoice	0
EngineSize	0
Cylinders	0
Horsepower	0
MPG_City	0
MPG_Highway	0
Weight	0
Wheelbase	0
Length	0

dtype: int64

***What are the different type of make are there in our dataset, and how many time dose they oocure?***

```
car.head(2)
```

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice
0	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337
1	Acura	RSX	Type S 2dr	Sedan	Front	\$23,820	\$21,761

  

	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
```

```
   Wheelbase  Length
0         106     189
1         101     172
```

```
car["Make"].value_counts()
```

```
Make
Toyota          28
Chevrolet        27
Mercedes-Benz    26
Ford             23
BMW              20
Audi             19
Honda            17
Nissan            17
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
```

```
car.groupby("Make").size()
```

```

Make
Acura      7
Audi       19
BMW        20
Buick       9
Cadillac   8
Chevrolet  27
Chrysler   15
Dodge      13
Ford       23
GMC        8
Honda      17
Hummer     1
Hyundai    12
Infiniti   8
Isuzu      2
Jaguar     12
Jeep       3
Kia        11
Land Rover 3
Lexus      11
Lincoln    9
MINI       2
Mazda      11
Mercedes-Benz 26
Mercury    9
Mitsubishi 13
Nissan      17
Oldsmobile 3
Pontiac    11
Porsche    7
Saab       7
Saturn     8
Scion      2
Subaru     11
Suzuki     8
Toyota     28
Volkswagen 15
Volvo      12
dtype: int64

```

***Show all the record where orgin is ASIA/EUROPE?***

```
car.head(2)
```

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice
0	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337

1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761
---	-------	----------------	-------	------	-------	----------	----------

	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

	Wheelbase	Length
0	106	189
1	101	172

```
car[car["Origin"].isin(["Asia","Europe"])]
```

	Make	Model	Type	Origin	DriveTrain	MSRP \
0	Acura	MDX	SUV	Asia	All	\$36,945
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820
2	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990
3	Acura	TL 4dr	Sedan	Asia	Front	\$33,195
4	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755
...	...	...	...	...	...	..
423	Volvo	C70 LPT convertible 2dr	Sedan	Europe	Front	\$40,565
424	Volvo	C70 HPT convertible 2dr	Sedan	Europe	Front	\$42,565
425	Volvo	S80 T6 4dr	Sedan	Europe	Front	\$45,210
426	Volvo	V40	Wagon	Europe	Front	\$26,135
427	Volvo	XC70	Wagon	Europe	All	\$35,145

	Invoice	EngineSize	Cylinders	Horsepower	MPG_City	MPG_Highway \
0	\$33,337	3.5	6.0	265	17	23
1	\$21,761	2.0	4.0	200	24	31
2	\$24,647	2.4	4.0	200	22	29
3	\$30,299	3.2	6.0	270	20	28
4	\$39,014	3.5	6.0	225	18	24
...	...	...	...	...	...	..

```

.
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]

***Remove all the record where weight is above 4000.***

```
car.head(2)
```

```

      Make      Model  Type  Origin  DriveTrain      MSRP      Invoice
\
0  Acura      MDX    SUV    Asia      All    $36,945    $33,337
1  Acura  RSX Type S 2dr  Sedan    Asia      Front    $23,820    $21,761

```

```

      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

```

```

      Wheelbase  Length
0          106     189
1          101     172

```

```
car[~(car["Weight"] > 4000)]
```

```

      Make      Model  Type  Origin  DriveTrain
MSRP \

```

1	Acura	RSX Type S	2dr	Sedan	Asia	Front	\$23,820
2	Acura	TSX	4dr	Sedan	Asia	Front	\$26,990
3	Acura	TL	4dr	Sedan	Asia	Front	\$33,195
4	Acura	3.5 RL	4dr	Sedan	Asia	Front	\$43,755
5	Acura	3.5 RL w/Navigation	4dr	Sedan	Asia	Front	\$46,100
..	...		...	...	...	...	..
423	Volvo	C70 LPT convertible	2dr	Sedan	Europe	Front	\$40,565
424	Volvo	C70 HPT convertible	2dr	Sedan	Europe	Front	\$42,565
425	Volvo	S80 T6	4dr	Sedan	Europe	Front	\$45,210
426	Volvo	V40	Wagon	Europe	Front	\$26,135	
427	Volvo	XC70	Wagon	Europe	All	\$35,145	
Invoice							
MPG_Highway \	EngineSize	Cylinders	Horsepower	MPG_City			
1	\$21,761	2.0	4.0	200	24		
31							
2	\$24,647	2.4	4.0	200	22		
29							
3	\$30,299	3.2	6.0	270	20		
28							
4	\$39,014	3.5	6.0	225	18		
24							
5	\$41,100	3.5	6.0	225	18		
24							
..	...	...	...	...	...	..	
.							
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							
1	2778	101	172				

2	3230	105	183
3	3575	108	186
4	3880	115	197
5	3893	115	197
...	...	...	...
423	3450	105	186
424	3450	105	186
425	3653	110	190
426	2822	101	180
427	3823	109	186

[325 rows x 15 columns]

## ***Increase all the value of "MPG City" Coloumn by 3?***

```
car.head(2)
```

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1	2.0	4.0	200	24	31	2778

  

	Wheelbase	Length
0	106	189
1	101	172

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

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0	Acura	MDX	SUV	Asia	All	\$36,945
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4	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755
...	...	...	...	...	...	...
423	Volvo	C70 LPT convertible 2dr	Sedan	Europe	Front	\$40,565



424	Volvo	C70 HPT convertible 2dr	Sedan	Europe	Front	\$42,565
425	Volvo	S80 T6 4dr	Sedan	Europe	Front	\$45,210
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3	\$30,299	3.2	6.0	270	23	28
4	\$39,014	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	2.5	5.0	208	23	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

[428 rows x 15 columns]