

Data Analysis

Car Dataset analysis

Importing library

```
import pandas as pd
```

Importing Dataset

```
car=pd.read_csv('/content/Cars Data.csv')
```

```
car.head()
```

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	MPG_City
0	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337	3.5	6.0	265.0	17
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761	2.0	4.0	200.0	24
2	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	2.4	4.0	200.0	22
3	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	3.2	6.0	270.0	20
4	Acura	3.5 RL	Sedan	Asia	Front	\$43,755	\$39,014	3.5	6.0	225.0	18

```
car.shape
```

```
(432, 15)
```

Clearing Dataset

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

```
Make          4
Model         4
Type          4
Origin        4
DriveTrain    4
MSRP          4
Invoice       4
EngineSize    4
Cylinders     6
Horsepower    4
MPG_City      4
MPG_Highway   4
Weight        4
Wheelbase     4
Length        4
dtype: int64
```

Removing possible null values and replacing it with the mean values of that column.

```
car['Cylinders'].fillna(car['Cylinders'].mean(),inplace=True)
car['Weight'].fillna(car['Weight'].mean(),inplace=True)
car['Wheelbase'].fillna(car['Wheelbase'].mean(),inplace=True)
car['Length'].fillna(car['Length'].mean(),inplace=True)
car['MPG_Highway'].fillna(car['MPG_Highway'].mean(),inplace=True)
car['MPG_City'].fillna(car['MPG_City'].mean(),inplace=True)
car['Horsepower'].fillna(car['Horsepower'].mean(),inplace=True)
car['EngineSize'].fillna(car['EngineSize'].mean(),inplace=True)
```

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

```
Make          4
```

```
Model      4
Type       4
Origin     4
DriveTrain 4
MSRP       4
Invoice    4
EngineSize 0
Cylinders  0
Horsepower 0
MPG_City   0
MPG_Highway 0
Weight     0
Wheelbase  0
Length     0
dtype: int64
```

Checking different types of **Make** values and count the occurrence of the same.

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

```
Toyota      28
Chevrolet   27
Mercedes-Benz 26
Ford        23
BMW         20
Audi        19
Nissan       17
Honda       17
Chrysler    15
Volkswagen  15
Mitsubishi  13
Dodge       13
Volvo       12
Jaguar       12
Hyundai      12
Mazda        11
Kia          11
Subaru       11
Lexus        11
```

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

Name: Make, dtype: int64

Data Filtering

Filter the data which has origin **Asia** and **Europe**.

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

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower
0	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337	3.5	6.0	265.0
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761	2.0	4.0	200.0
2	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	2.4	4.0	200.0
3	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	3.2	6.0	270.0
4	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39,014	3.5	6.0	225.0
...
427	Volvo	C70 LPT convertible 2dr	Sedan	Europe	Front	\$40,565	\$38,203	2.4	5.0	197.0

Remove the rows which have **Weight** more than 4000.

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

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	MPG_City	MPG_Highway
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761	2.0	4.0	200.0	24.0	31.0
2	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	2.4	4.0	200.0	22.0	29.0
3	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	3.2	6.0	270.0	20.0	28.0
4	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39,014	3.5	6.0	225.0	18.0	24.0
5	Acura	3.5 RL w/Navigation 4dr	Sedan	Asia	Front	\$46,100	\$41,100	3.5	6.0	225.0	18.0	24.0

Increase the value of **MPG_City** by 3.

```
427 Volvo convertible Sedan Europe Front $40,565 $38,203 2.4 5.0 197.0 21.0 28.0
```

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

```
OUTPUT
```

Final data after analysis.

```
428 Volvo S80 T6 4dr Sedan Europe Front $45,210 $42,572 2.0 6.0 268.0 19.0 26.0
```

```
car
```

	Make	Model	Type	Origin	DriveTrain	MSRP	Invoice	EngineSize	Cylinders	Horsepower	MPG_City	MPG_Highway	Weight
0	Acura	MDX	SUV	Asia	All	\$36,945	\$33,337	3.5	6.0	265.0	20.0	23.0	4
1	Acura	RSX Type S 2dr	Sedan	Asia	Front	\$23,820	\$21,761	2.0	4.0	200.0	27.0	31.0	2
2	Acura	TSX 4dr	Sedan	Asia	Front	\$26,990	\$24,647	2.4	4.0	200.0	25.0	29.0	3
3	Acura	TL 4dr	Sedan	Asia	Front	\$33,195	\$30,299	3.2	6.0	270.0	23.0	28.0	3
4	Acura	3.5 RL 4dr	Sedan	Asia	Front	\$43,755	\$39,014	3.5	6.0	225.0	21.0	24.0	3
...
427	Volvo	C70 LPT convertible 2dr	Sedan	Europe	Front	\$40,565	\$38,203	2.4	5.0	197.0	24.0	28.0	3
428	Volvo	C70 HPT convertible 2dr	Sedan	Europe	Front	\$42,565	\$40,083	2.3	5.0	242.0	23.0	26.0	3
429	Volvo	S80 T6 4dr	Sedan	Europe	Front	\$45,210	\$42,573	2.9	6.0	268.0	22.0	26.0	3
430	Volvo	V40	Wagon	Europe	Front	\$26,135	\$24,641	1.9	4.0	170.0	25.0	29.0	2
431	Volvo	XC70	Wagon	Europe	All	\$35,145	\$33,112	2.5	5.0	208.0	23.0	27.0	3

432 rows × 15 columns