In [3]:

```
import pandas as pd
```

In [14]:

```
df=pd.read_csv("Automobile_data (1).csv")
```

1) From given data set print first and last five rows

In [15]:

```
df.head(5)
```

Out[15]:

	index	company	body-style	wheel-base	length	engine-type	num-of-cylinders	horsepower	average-mileage	pri
0	0	alfa-romero	convertible	88.6	168.8	dohc	four	111	21	13495
1	1	alfa-romero	convertible	88.6	168.8	dohc	four	111	21	16500
2	2	alfa-romero	hatchback	94.5	171.2	ohcv	six	154	19	16500
3	3	audi	sedan	99.8	176.6	ohc	four	102	24	13950
4	4	audi	sedan	99.4	176.6	ohc	five	115	18	17450

In [16]:

```
df.tail(5)
```

Out[16]:

	index	company	body-style	wheel-base	length	engine-type	num-of-cylinders	horsepower	average-mileage	pric
56	81	volkswagen	sedan	97.3	171.7	ohc	four	85	27	7975.
57	82	volkswagen	sedan	97.3	171.7	ohc	four	52	37	7995.
58	86	volkswagen	sedan	97.3	171.7	ohc	four	100	26	9995.
59	87	volvo	sedan	104.3	188.8	ohc	four	114	23	12940.
60	88	volvo	wagon	104.3	188.8	ohc	four	114	23	13415.

2) Print All Toyota Cars details (hint: use groupby function)

In [17]:

```
car_Manufacturers = df.groupby('company')
toyotaDf = car_Manufacturers.get_group('toyota')
toyotaDf
```

Out[17]:

	index	company	body-style	wheel-base	length	engine-type	num-of-cylinders	horsepower	average-mileage	pri
48	66	toyota	hatchback	95.7	158.7	ohc	four	62	35	534
49	67	toyota	hatchback	95.7	158.7	ohc	four	62	31	633
50	68	toyota	hatchback	95.7	158.7	ohc	four	62	31	648
51	69	toyota	wagon	95.7	169.7	ohc	four	62	31	691
52	70	toyota	wagon	95.7	169.7	ohc	four	62	27	789
53	71	toyota	wagon	95.7	169.7	ohc	four	62	27	877
54	79	toyota	wagon	104.5	187.8	dohc	six	156	19	1575

3) Count total cars per company (by using value_counts function)

In [18]:

```
df['company'].value_counts()
```

Out[18]:

```
toyota           7
bmw              6
mazda            5
nissan           5
audi             4
mercedes-benz    4
mitsubishi       4
volkswagen       4
alfa-romero      3
chevrolet        3
honda            3
isuzu            3
jaguar           3
porsche          3
dodge            2
volvo            2
Name: company, dtype: int64
```

4) Find each company’s Higesht price car. (hint: Groupby function and then apply .max function)

In [19]:

```
car_Manufacturers = df.groupby('company')
priceDf = car_Manufacturers['company','price'].max()
priceDf
```

```
C:\Users\SOWMYA~1\AppData\Local\Temp/ipykernel_19196/1278452937.py:2: Future
Warning: Indexing with multiple keys (implicitly converted to a tuple of key
s) will be deprecated, use a list instead.
  priceDf = car_Manufacturers['company','price'].max()
```

Out[19]:

	company	price
company		
alfa-romero	alfa-romero	16500.0
audi	audi	18920.0
bmw	bmw	41315.0
chevrolet	chevrolet	6575.0
dodge	dodge	6377.0
honda	honda	12945.0
isuzu	isuzu	6785.0
jaguar	jaguar	36000.0
mazda	mazda	18344.0
mercedes-benz	mercedes-benz	45400.0
mitsubishi	mitsubishi	8189.0
nissan	nissan	13499.0
porsche	porsche	37028.0
toyota	toyota	15750.0
volkswagen	volkswagen	9995.0
volvo	volvo	13415.0

5) Find the average mileage of each car making company (hint: Groupby function and then apply .mean function)

In [20]:

```
car_Manufacturers = df.groupby('company')
mileageDf = car_Manufacturers['company','average-mileage'].mean()
mileageDf
```

```
C:\Users\SOWMYA~1\AppData\Local\Temp/ipykernel_19196/2027604533.py:2: Future
Warning: Indexing with multiple keys (implicitly converted to a tuple of key
s) will be deprecated, use a list instead.
  mileageDf = car_Manufacturers['company','average-mileage'].mean()
```

Out[20]:

	average-mileage
company	
alfa-romero	20.333333
audi	20.000000
bmw	19.000000
chevrolet	41.000000
dodge	31.000000
honda	26.333333
isuzu	33.333333
jaguar	14.333333
mazda	28.000000
mercedes-benz	18.000000
mitsubishi	29.500000
nissan	31.400000
porsche	17.000000
toyota	28.714286
volkswagen	31.750000
volvo	23.000000

6) Sort all cars by Price column (hint: using sort_values function).

In [25]:

```
df = df.sort_values(by=['price', 'horsepower'], ascending=False)
df.head(5)
```

Out[25]:

	index	company	body-style	wheel-base	length	engine-type	num-of-cylinders	horsepower	average-mileage	p
35	47	mercedes-benz	hardtop	112.0	199.2	ohcv	eight	184	14	454
11	14	bmw	sedan	103.5	193.8	ohc	six	182	16	413
34	46	mercedes-benz	sedan	120.9	208.1	ohcv	eight	184	14	409
46	62	porsche	convertible	89.5	168.9	ohcf	six	207	17	370
12	15	bmw	sedan	110.0	197.0	ohc	six	182	15	368

7) Check for the null values for entire dataset.

In [26]:

```
data.isnull().sum()
```

Out[26]:

```
company    0
price      0
dtype: int64
```