```python
import pandas as pd
import numpy as np
```

```python
df=pd.read_csv('E:\CDAC ARTIFICIAL INTELLIGIENCE\data analytics\car.csv')
```

```python
#pd.set_option("display.max_column",None)
#pd.set_option("display.max_rows",None)
df
```

	Make	Model	Year	Engine Fuel Type	Engine HP	Engine Cylinders	Transmission Type	Driven_Wheels
0	BMW	1 Series M	2011	premium unleaded (required)	335.0	6.0	MANUAL	rear wheel drive
1	BMW	1 Series	2011	premium unleaded (required)	300.0	6.0	MANUAL	rear wheel drive
2	BMW	1 Series	2011	premium unleaded (required)	300.0	6.0	MANUAL	rear wheel drive
3	BMW	1 Series	2011	premium unleaded (required)	230.0	6.0	MANUAL	rear wheel drive
4	BMW	1 Series	2011	premium unleaded (required)	230.0	6.0	MANUAL	rear wheel drive
...	...	...	...	...	...	...	...	...
11909	Acura	ZDX	2012	premium unleaded (required)	300.0	6.0	AUTOMATIC	all wheel drive
11910	Acura	ZDX	2012	premium unleaded (required)	300.0	6.0	AUTOMATIC	all wheel drive
11911	Acura	ZDX	2012	premium unleaded (required)	300.0	6.0	AUTOMATIC	all wheel drive
11912	Acura	ZDX	2013	premium unleaded (recommended)	300.0	6.0	AUTOMATIC	all wheel drive
11913	Lincoln	Zephyr	2006	regular unleaded	221.0	6.0	AUTOMATIC	front wheel drive

11914 rows × 16 columns

Q1.Most expensive car for each car company

make.

In [14]:

```python
df.groupby("Make")["MSRP"].max()
```

Out[14]:

```
Make
Acura            156000
Alfa Romeo        68400
Aston Martin     320695
Audi             199900
BMW              141200
Bentley          363000
Bugatti         2065902
Buick             49625
Cadillac         104215
Chevrolet         92395
Chrysler          49470
Dodge            120395
FIAT              31800
Ferrari          643330
Ford             149995
GMC               71665
Genesis           54550
HUMMER            43130
Honda             47070
Hyundai           68750
Infiniti          88850
Kia               61900
Lamborghini     1500000
Land Rover       199495
Lexus            375000
Lincoln           76650
Lotus             93225
Maserati         182009
Maybach         1382750
Mazda             44015
McLaren          280225
Mercedes-Benz    495000
Mitsubishi        38995
Nissan           149990
Oldsmobile        36795
Plymouth          44625
Pontiac           37610
Porsche          440000
Rolls-Royce      492425
Saab              51330
Scion             31090
Spyker           219990
Subaru            39995
Suzuki            31749
Tesla            134500
Toyota            84325
Volkswagen       101300
Volvo             65700
Name: MSRP, dtype: int64
```

Q2.Most expensive convertible vehicle for each company.

In [ ]:

```
convertible=df[df['Vehicle Style'] == 'Convertible']
```

In [12]:

```
convertible.groupby('Make')['MSRP'].max()
```

Out[12]:

```
Make
Alfa Romeo          65900
Aston Martin       320695
Audi               199600
BMW                136900
Bentley            363000
Buick               37065
Cadillac           104215
Chevrolet           92395
Chrysler            49470
Dodge                2000
FIAT                28195
Ferrari            294080
Ford                60110
Honda               37995
Infiniti            62100
Lamborghini        548800
Lexus               68405
Lotus               57950
Maserati           182009
Maybach           1382750
Mazda               32655
McLaren            280225
Mercedes-Benz      495000
Mitsubishi          32599
Nissan              49400
Oldsmobile           2000
Plymouth            44625
Pontiac             32300
Porsche            440000
Rolls-Royce        492000
Saab                51330
Spyker             219990
Toyota              30710
Volkswagen          42745
Volvo               41200
Name: MSRP, dtype: int64
```

Q3.List all the cars which are automatic/

```
df[df['Transmission Type']=='AUTOMATIC']
```

	Make	Model	Year	Engine Fuel Type	Engine HP	Engine Cylinders	Transmission Type	Driven_Wheels
19	Audi	100	1992	regular unleaded	172.0	6.0	AUTOMATIC	all wheel drive
23	Audi	100	1993	regular unleaded	172.0	6.0	AUTOMATIC	all wheel drive
27	Audi	100	1994	regular unleaded	172.0	6.0	AUTOMATIC	front wheel drive
30	Audi	100	1994	regular unleaded	172.0	6.0	AUTOMATIC	front wheel drive
31	Audi	100	1994	regular unleaded	172.0	6.0	AUTOMATIC	all wheel drive
...	...	...	...	...	...	...	...	...
11909	Acura	ZDX	2012	premium unleaded (required)	300.0	6.0	AUTOMATIC	all wheel drive
11910	Acura	ZDX	2012	premium unleaded (required)	300.0	6.0	AUTOMATIC	all wheel drive
11911	Acura	ZDX	2012	premium unleaded (required)	300.0	6.0	AUTOMATIC	all wheel drive
11912	Acura	ZDX	2013	premium unleaded (recommended)	300.0	6.0	AUTOMATIC	all wheel drive
11913	Lincoln	Zephyr	2006	regular unleaded	221.0	6.0	AUTOMATIC	front wheel drive

8266 rows × 16 columns

Q4.Premium cars of each car company.

```
premium=df[df['Engine Fuel Type']=='premium unleaded (required)']
```

```
premium.groupby('Make')['MSRP'].max()
```

```
Make
Acura              156000
Alfa Romeo          68400
Aston Martin       320695
Audi               199900
BMW                141200
Bentley            363000
Bugatti           2065902
Buick               40730
Cadillac           104215
Chevrolet           92395
Chrysler            49470
Dodge              120395
Ferrari            643330
Ford               149995
Honda               37995
Infiniti            67050
Lamborghini       1500000
Land Rover         184105
Lexus              375000
Lincoln             51785
Lotus               93225
Maserati           182009
Maybach           1382750
Mazda               32960
McLaren            280225
Mercedes-Benz      495000
Mitsubishi          38995
Nissan             149990
Oldsmobile          35085
Plymouth            44625
Pontiac             35585
Porsche            440000
Rolls-Royce        492425
Saab                48010
Scion               31090
Spyker             219990
Subaru              39995
Toyota              25645
Volkswagen         101300
Volvo               36500
Name: MSRP, dtype: int64
```

Q5.Average price of cars each car compamy make.

```
average_price = df.groupby('Make')['MSRP'].mean()
average_price
```

Out[25]:

```
Make
Acura              3.488759e+04
Alfa Romeo         6.160000e+04
Aston Martin       1.979104e+05
Audi               5.345211e+04
BMW                6.154676e+04
Bentley            2.471693e+05
Bugatti            1.757224e+06
Buick              2.820661e+04
Cadillac           5.623132e+04
Chevrolet          2.835039e+04
Chrysler           2.672296e+04
Dodge              2.239006e+04
FIAT               2.267024e+04
Ferrari            2.382188e+05
Ford               2.739927e+04
GMC                3.049330e+04
Genesis            4.661667e+04
HUMMER             3.646441e+04
Honda              2.667434e+04
Hyundai            2.459704e+04
Infiniti           4.239421e+04
Kia                2.531017e+04
Lamborghini        3.315673e+05
Land Rover         6.782322e+04
Lexus              4.754907e+04
Lincoln            4.283983e+04
Lotus              6.918828e+04
Maserati           1.142077e+05
Maybach            5.462219e+05
Mazda              2.003938e+04
McLaren            2.398050e+05
Mercedes-Benz      7.147623e+04
Mitsubishi         2.124054e+04
Nissan             2.858343e+04
Oldsmobile         1.154254e+04
Plymouth           3.122902e+03
Pontiac            1.932155e+04
Porsche            1.016224e+05
Rolls-Royce        3.511306e+05
Saab               2.741350e+04
Scion              1.993250e+04
Spyker             2.133233e+05
Subaru             2.482750e+04
Suzuki             1.790721e+04
Tesla              8.525556e+04
Toyota             2.903002e+04
Volkswagen         2.810238e+04
Volvo              2.854116e+04
Name: MSRP, dtype: float64
```

In [ ]:

In [ ]: