# Importing libraries

In [1]:
```python
import pandas as pd
import numpy as np
from numpy import linalg as la
from numpy import cov
```

# Importing dataset

In [2]:
```python
data=pd.read_csv(r"C:\Users\user\Downloads\4_drug200 - 4_drug200.csv")
data
```

Out[2]:

|  | Age | Sex | BP | Cholesterol | Na_to_K | Drug |
|---|---|---|---|---|---|---|
| 0 | 23 | F | HIGH | HIGH | 25.355 | drugY |
| 1 | 47 | M | LOW | HIGH | 13.093 | drugC |
| 2 | 47 | M | LOW | HIGH | 10.114 | drugC |
| 3 | 28 | F | NORMAL | HIGH | 7.798 | drugX |
| 4 | 61 | F | LOW | HIGH | 18.043 | drugY |
| ... | ... | ... | ... | ... | ... | ... |
| 195 | 56 | F | LOW | HIGH | 11.567 | drugC |
| 196 | 16 | M | LOW | HIGH | 12.006 | drugC |
| 197 | 52 | M | NORMAL | HIGH | 9.894 | drugX |
| 198 | 23 | M | NORMAL | NORMAL | 14.020 | drugX |
| 199 | 40 | F | LOW | NORMAL | 11.349 | drugX |

200 rows × 6 columns

# a.mean

In [3]:
```python
print(data.mean())
```

```
Age        44.315000
Na_to_K    16.084485
dtype: float64
```

# median

In [4]:
```python
print(data.median())
```

```
Age        45.0000
Na_to_K    13.9365
dtype: float64
```

# mode

In [5]:
```
print(data.mode())
```

```
     Age  Sex      BP Cholesterol  Na_to_K   Drug
0   47.0    M    HIGH        HIGH   12.006  drugY
1    NaN  NaN     NaN         NaN   18.295    NaN
```

# describe

In [6]:
```
print(data.describe())
```

```
              Age      Na_to_K
count  200.000000   200.000000
mean    44.315000    16.084485
std     16.544315     7.223956
min     15.000000     6.269000
25%     31.000000    10.445500
50%     45.000000    13.936500
75%     58.000000    19.380000
max     74.000000    38.247000
```

# b.sum()

In [7]:
```
print(data.sum())
```

```
Age                                                         8863
Sex            FMMFFFFMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
BP             HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...
Cholesterol    HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...
Na_to_K                                                 3216.897
Drug           drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...
dtype: object
```

# cumsum()

In [8]:
```
print(data.cumsum())
```

```
      Age                                                    Sex  \
0      23                                                      F
1      70                                                     FM
2     117                                                    FMM
3     145                                                   FMMF
4     206                                                  FMMFF
..    ...                                                    ...
195  8732   FMMFFFFMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
196  8748   FMMFFFFMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
197  8800   FMMFFFFMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
198  8823   FMMFFFFMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
199  8863   FMMFFFFMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
```

```
                                                       BP  \
0                                                    HIGH
1                                                 HIGHLOW
2                                              HIGHLOWLOW
3                                        HIGHLOWLOWNORMAL
4                                     HIGHLOWLOWNORMALLOW
..                                                     ...
195   HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...
196   HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...
197   HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...
198   HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...
199   HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...

                                               Cholesterol    Na_to_K  \
0                                                     HIGH     25.355
1                                                 HIGHHIGH     38.448
2                                             HIGHHIGHHIGH     48.562
3                                         HIGHHIGHHIGHHIGH     56.360
4                                     HIGHHIGHHIGHHIGHHIGH     74.403
..                                                     ...        ...
195   HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...   3169.628
196   HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...   3181.634
197   HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...   3191.528
198   HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...   3205.548
199   HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...   3216.897

                                                     Drug
0                                                   drugY
1                                              drugYdrugC
2                                         drugYdrugCdrugC
3                                    drugYdrugCdrugCdrugX
4                               drugYdrugCdrugCdrugXdrugY
..                                                     ...
195   drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...
196   drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...
197   drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...
198   drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...
199   drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...

[200 rows x 6 columns]
```

# count

```
In [9]:   print(data.count())
```

```
Age            200
Sex            200
BP             200
Cholesterol    200
Na_to_K        200
Drug           200
dtype: int64
```

# min

```
In [10]:   print(data.min())
```

```
Age                 15
Sex                  F
BP                HIGH
Cholesterol       HIGH
Na_to_K          6.269
Drug             drugA
dtype: object
```

# max()

In [11]:
```python
print(data.max())
```

```
Age                 74
Sex                  M
BP              NORMAL
Cholesterol     NORMAL
Na_to_K         38.247
Drug             drugY
dtype: object
```

# covariance

In [12]:
```python
print(data.cov())
```

```
               Age      Na_to_K
Age       273.714347  -7.543752
Na_to_K    -7.543752  52.185533
```

# corelation

# pearson corelation

In [14]:
```python
from scipy.stats import pearsonr
print(pearsonr(data["Age"],data["Na_to_K"]))
```

```
(-0.06311949726772592, 0.3745756399034559)
```

# spearmen corelation

In [15]:
```python
from scipy.stats import spearmanr
print(spearmanr(data["Age"],data["Na_to_K"]))
```

```
SpearmanrResult(correlation=-0.047273882688479915, pvalue=0.5062200581387418)
```

In [ ]: