EDA-Exploitary Data Analysis -Drug Dataset

import libraries

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib as pp
```

import dataset

In [2]:
```
data=pd.read_csv(r"E:\154\4_drug200.csv")
```

In [3]:
```
display(data)
```

	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

To display top 10 rows

In [4]:
```
data.head(10)
```

Out[4]:

	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
5	22	F	NORMAL	HIGH	8.607	drugX
6	49	F	NORMAL	HIGH	16.275	drugY
7	41	M	LOW	HIGH	11.037	drugC
8	60	M	NORMAL	HIGH	15.171	drugY
9	43	M	LOW	NORMAL	19.368	drugY

In [ ]:
```

```

To display last 5 rows

In [5]:
```
data.tail()
```

Out[5]:

	Age	Sex	BP	Cholesterol	Na_to_K	Drug
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

In [6]:
```
data.dtypes
```

Out[6]:
```
Age              int64
Sex             object
BP              object
Cholesterol     object
Na_to_K        float64
Drug            object
dtype: object
```

To view statistical summary

In [7]:
```
data.describe()
```

Out[7]:

	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

To Print no of elements

In [8]:
```
data.size
```

Out[8]: 1200

In [9]:
```
data.ndim
```

Out[9]: 2

To print no of rows and columns

In [10]:
```
data.shape
```

Out[10]: (200, 6)

To find missing values

In [11]:
```
data.isna()
```

Out[11]:

	Age	Sex	BP	Cholesterol	Na_to_K	Drug
0	False	False	False	False	False	False
1	False	False	False	False	False	False
2	False	False	False	False	False	False
3	False	False	False	False	False	False
4	False	False	False	False	False	False
...	...	...	...	...	...	...
195	False	False	False	False	False	False
196	False	False	False	False	False	False
197	False	False	False	False	False	False
198	False	False	False	False	False	False
199	False	False	False	False	False	False

200 rows × 6 columns

To drop nulll values with constatns

In [12]:
```
data.fillna(5)
```

Out[12]:

	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

In [13]:
```
data.dropna()
```

Out[13]:

	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

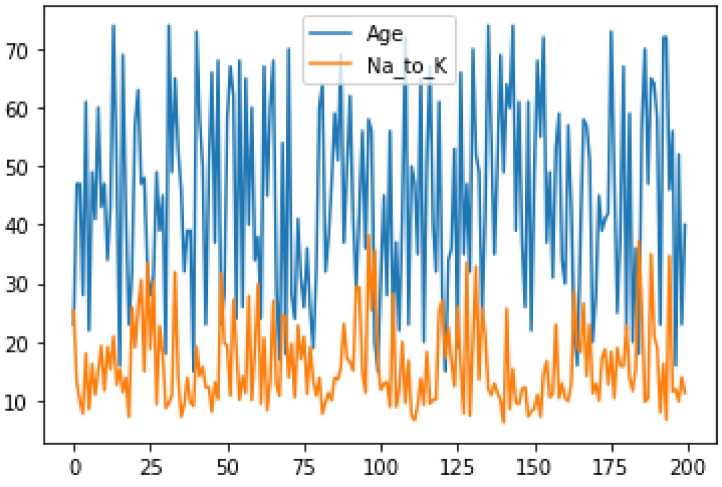
200 rows × 6 columns

Line Plot

Type *Markdown* and LaTeX: α^2

In [14]:
```
data.plot.line()
```

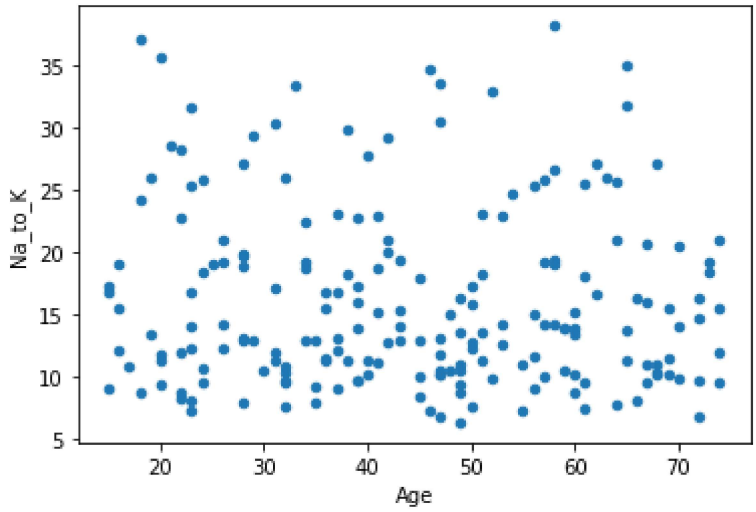
Out[14]: <AxesSubplot:>



Scatter Plot

In [15]:
```
data.plot.scatter(x='Age',y='Na_to_K')
```

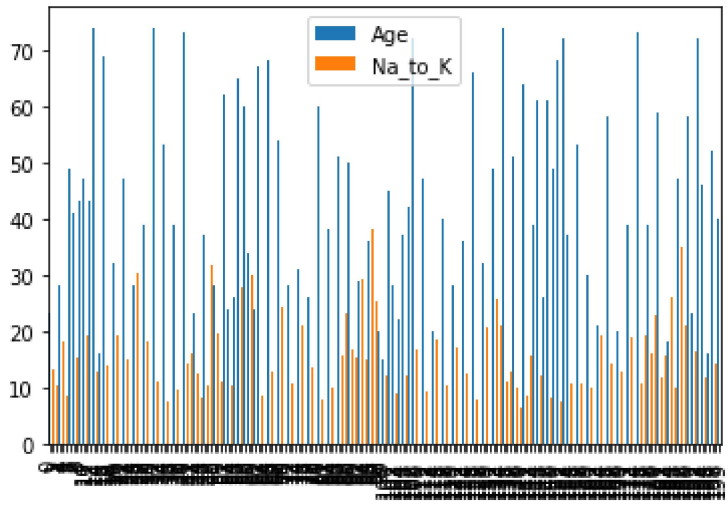
Out[15]:
```
<AxesSubplot:xlabel='Age', ylabel='Na_to_K'>
```



Bar Chart

In [16]:
```
data.plot.bar()
```

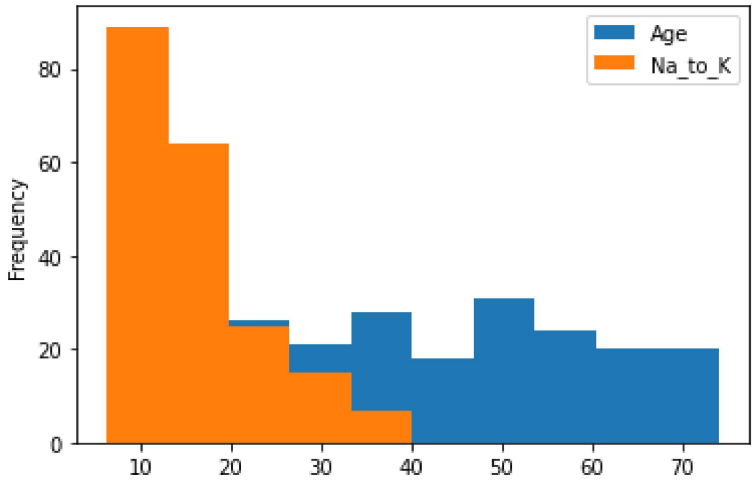
Out[16]:
```
<AxesSubplot:>
```



Histogram

In [17]:
```
data.plot.hist()
```

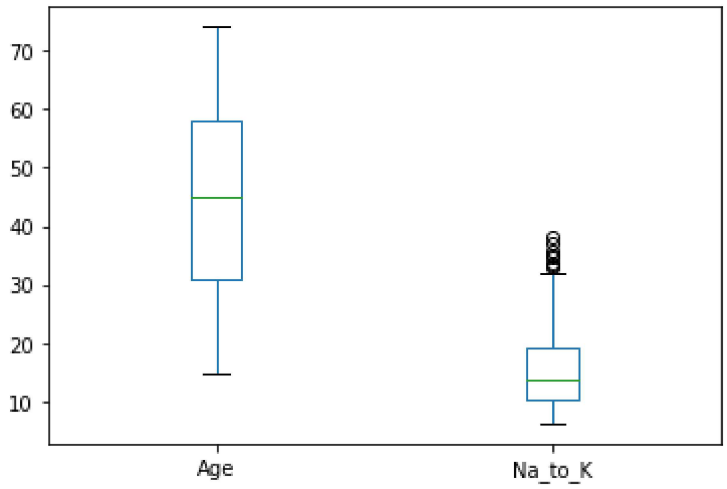
Out[17]: <AxesSubplot:ylabel='Frequency'>



Box Plot

In [18]:
```
data.plot.box()
```

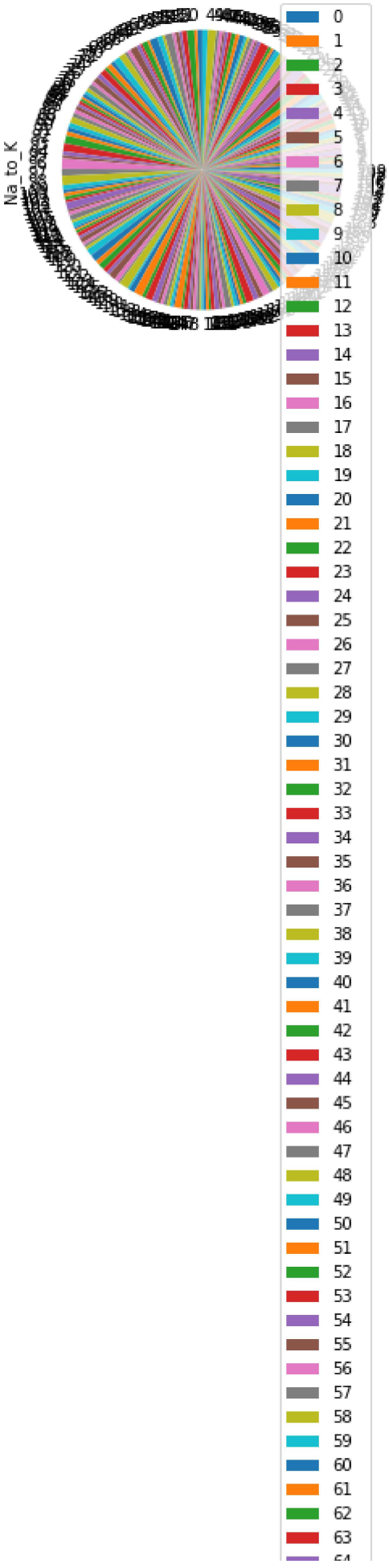
Out[18]: <AxesSubplot:>



Pie Chart

In [32]:
```
data.plot.pie(y="Na_to_K")
```

Out[32]:
```
<AxesSubplot:ylabel='Na_to_K'>
```


Na_to_K
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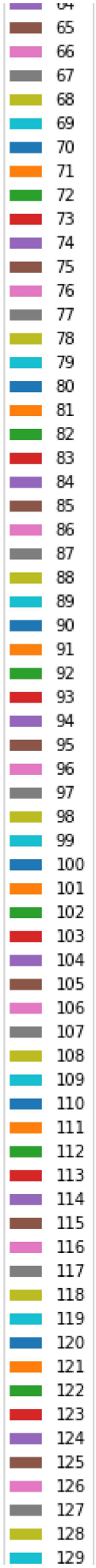
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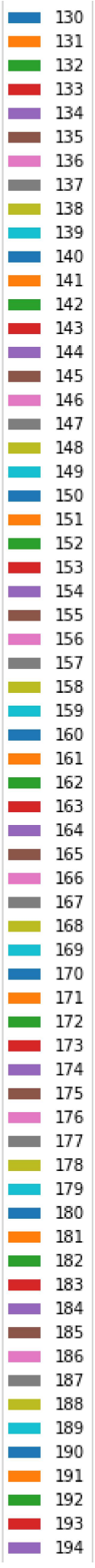
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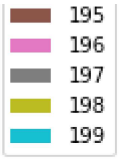
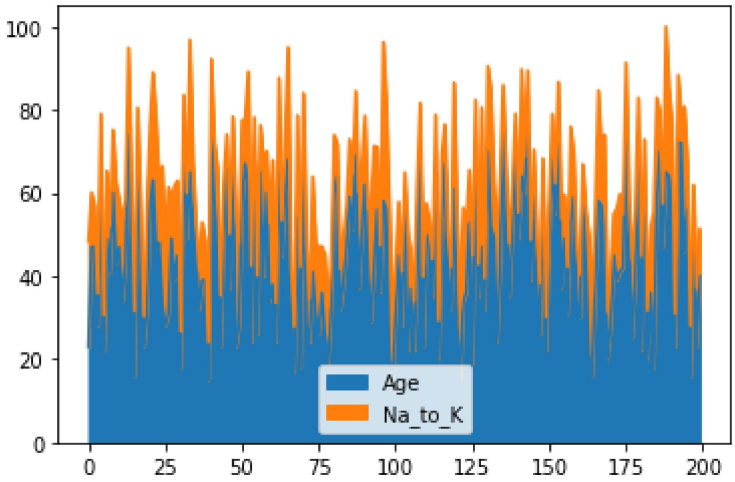


Area

In [20]:
```
data.plot.area()
```

Out[20]: <AxesSubplot:>



To Find Mean

In [21]:
```
data.mean()
```

Out[21]:
```
Age        44.315000
Na_to_K    16.084485
dtype: float64
```

To Find Median

In [22]:
```
data.median()
```

Out[22]:
```
Age        45.0000
Na_to_K    13.9365
dtype: float64
```

To Find Mode

In [23]:
```
data.mode()
```

Out[23]:

	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 [24]:
```
data.describe()
```

Out[24]:

	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

Sum

In [25]:
```
data.sum()
```

Out[25]:
```
Age                                                          8863
Sex            FMMFFFFMMMFFMFFFMMMFMMMFFFMFFMFMMFMMMMFMFFMMFF...
BP             HIGHLOWLOWNORMALLOWNORMALNORMALLOWNORMALLOWLOW...
Cholesterol    HIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHHIGHNORMALHIGH...
Na_to_K                                                  3216.897
Drug           drugYdrugCdrugCdrugXdrugYdrugXdrugYdrugCdrugYd...
dtype: object
```

Cumulative Sum

In [26]:
```
data.cumsum()
```

Out[26]:

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

200 rows × 6 columns

Minimum Values

In [27]:
```
data.min()
```

Out[27]:
```
Age              15
Sex               F
BP             HIGH
Cholesterol    HIGH
Na_to_K       6.269
Drug          drugA
dtype: object
```

Maximum Values

In [28]:
```
data.max()
```

Out[28]:
```
Age              74
Sex               M
BP           NORMAL
Cholesterol  NORMAL
Na_to_K      38.247
Drug          drugY
dtype: object
```

Correlation

In [29]:
```
from scipy.stats import spearmanr
print(spearmanr(data['Age'],data['Na_to_K']))
```

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

Covariance

In [30]:
```
from scipy.stats import pearsonr
print(pearsonr(data['Age'],data['Na_to_K']))
```

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

Count

In [31]:
```
data.count()
```

Out[31]:
```
Age            200
Sex            200
BP             200
Cholesterol    200
Na_to_K        200
Drug           200
dtype: int64
```