In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

DATA COLLECTION

In [2]:

```
a=pd.read_csv(r"C:\Users\user\Downloads\4_drug200 - 4_drug200.csv")
a
```

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

In [3]:

```
b=a.head(100)
b
```

Out[3]:

	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
...	...	...	...	...	...	...
95	36	M	LOW	NORMAL	11.424	drugX
96	58	F	LOW	HIGH	38.247	drugY
97	56	F	HIGH	HIGH	25.395	drugY
98	20	M	HIGH	NORMAL	35.639	drugY
99	15	F	HIGH	NORMAL	16.725	drugY

100 rows × 6 columns

DATA CLEANING AND PRE-PROCESSING

In [4]:

```
b.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 100 entries, 0 to 99
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Age          100 non-null    int64  
 1   Sex          100 non-null    object 
 2   BP           100 non-null    object 
 3   Cholesterol  100 non-null    object 
 4   Na_to_K      100 non-null    float64
 5   Drug         100 non-null    object 
dtypes: float64(1), int64(1), object(4)
memory usage: 4.8+ KB
```

In [5]:

```
b.describe()
```

Out[5]:

	Age	Na_to_K
count	100.000000	100.000000
mean	43.770000	16.823000
std	16.367531	7.257723
min	15.000000	7.285000
25%	30.500000	11.031250
50%	43.000000	15.025500
75%	58.000000	20.020250
max	74.000000	38.247000

In [6]:

```
b.columns
```

Out[6]:

```
Index(['Age', 'Sex', 'BP', 'Cholesterol', 'Na_to_K', 'Drug'], dtype='objec
t')
```

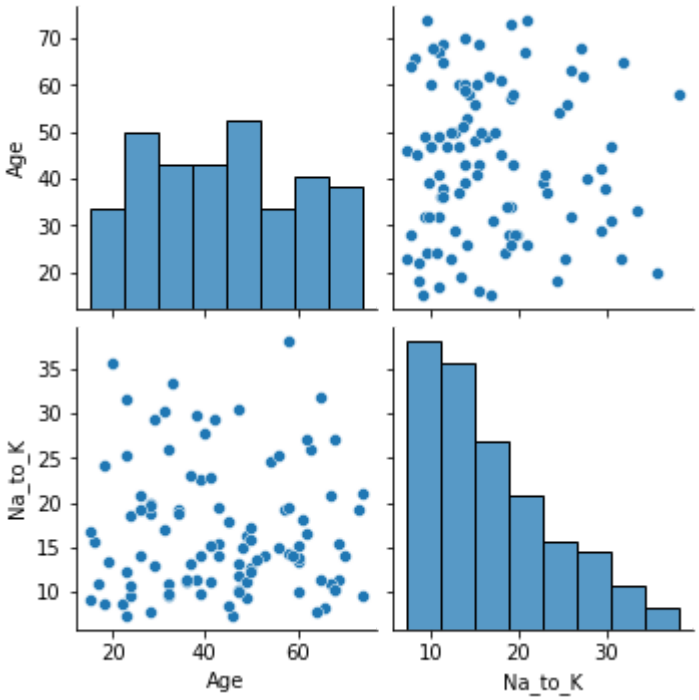
EDA AND VISUALIZATION

In [7]:

```
sns.pairplot(b)
```

Out[7]:

```
<seaborn.axisgrid.PairGrid at 0x29a8dd21bb0>
```



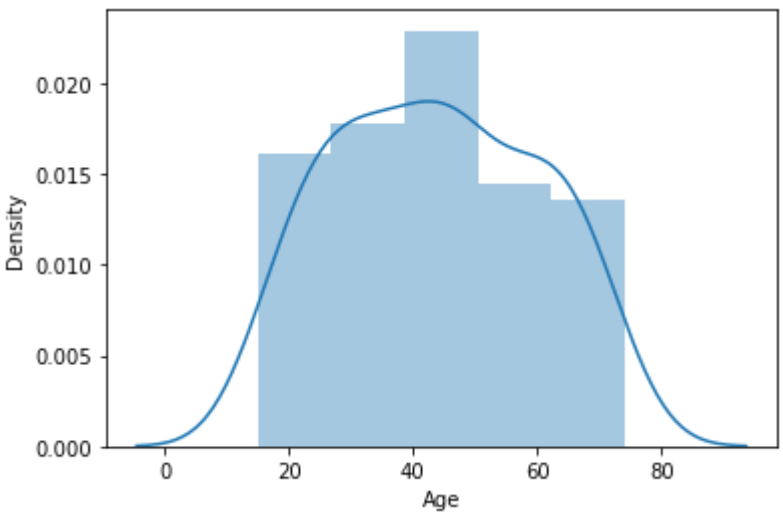
In [8]:

```
sns.distplot(b['Age'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557:
FutureWarning: `distplot` is a deprecated function and will be removed in
a future version. Please adapt your code to use either `displot` (a figure
-level function with similar flexibility) or `histplot` (an axes-level fun
ction for histograms).
  warnings.warn(msg, FutureWarning)
```

Out[8]:

```
<AxesSubplot:xlabel='Age', ylabel='Density'>
```



In [9]:

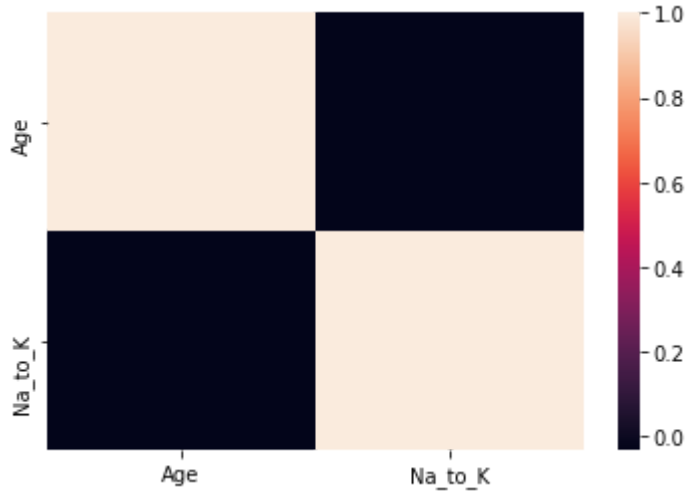
```
f=b[['Age','Na_to_K']]
```

In [10]:

```
sns.heatmap(f.corr())
```

Out[10]:

```
<AxesSubplot:>
```



In [11]:

```
x=f[['Age']]
y=f['Na_to_K']
```

In [12]:

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.5)
```

In [13]:

```
from sklearn.linear_model import LinearRegression

lr=LinearRegression()
lr.fit(x_train,y_train)
```

Out[13]:

```
LinearRegression()
```

In [14]:

```
print(lr.intercept_)
```

```
17.419245881561885
```

In [15]:

```
r=pd.DataFrame(lr.coef_,x.columns,columns=['Co-efficient'])
r
```

Out[15]:

	Co-efficient
Age	-0.02096

In [16]:

```
lr.score(x_train,y_train)
```

Out[16]:

```
0.0024011563540576875
```

In [17]:

```
print(lr.score(x_test,y_test))
```

```
-0.008546780456184955
```

RIDGE REGRESSION

In [18]:

```
from sklearn.linear_model import Ridge,Lasso
```

In [19]:

```
rr=Ridge(alpha=10)
rr.fit(x_train,y_train)
```

Out[19]:

```
Ridge(alpha=10)
```

In [20]:

```
rr.score(x_test,y_test)
```

Out[20]:

```
-0.00854387901678666
```

LASSO REGRESSION

In [21]:

```
la=Lasso(alpha=10)
la.fit(x_train,y_train)
```

Out[21]:

```
Lasso(alpha=10)
```

In [22]:

```
la.score(x_test,y_test)
```

Out[22]:

```
-0.0063207832286731325
```

In [ ]:

```

```