

# ASSIGNMENT 1

Q1. Write a program to find min, max, standard deviation and mean of every pattern from any of the three dataset,i.e.,iris, breast cancer and wine. Plot the extracted features in 2D and 3D graph.

```
[2]: from numpy import *
import pandas as pd
import matplotlib.pyplot as plt
from mpl_toolkits.mplot3d import axes3d, Axes3D

[3]: def minfunc(line):
    m = 100
    for x in line:
        if (x < m):
            m = x

    return m

[4]: def maxfunc(line):
    m = 0
    for x in line:
        if (x > m):
            m = x

    return m

[5]: def meanfunc(line):
    sum = 0

    for x in line:
        sum = sum + x

    m = sum / len(line)

    return m

[6]: def stdfunc(line):
    sum = 0

    for x in line:
        sum = sum + x

    mean = sum/len(line)

    for x in line:
        sum = sum + square(x - mean)

    std = sqrt(sum/len(line))
    return std

[7]: iris = pd.read_csv('iris.data')
iris = iris.to_numpy()
iris = delete(iris,-1,1)
minlist = []
maxlist = []
stdlist = []
meanlist = []

for x in iris:

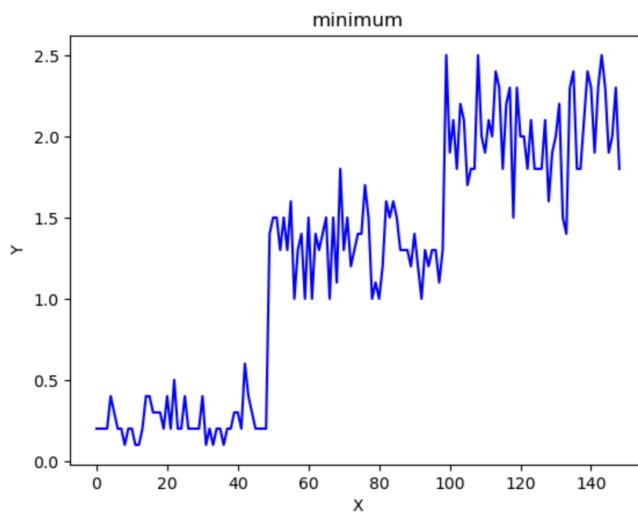
    min = minfunc(x)
    minlist.append(min)

    max = maxfunc(x)
    maxlist.append(max)

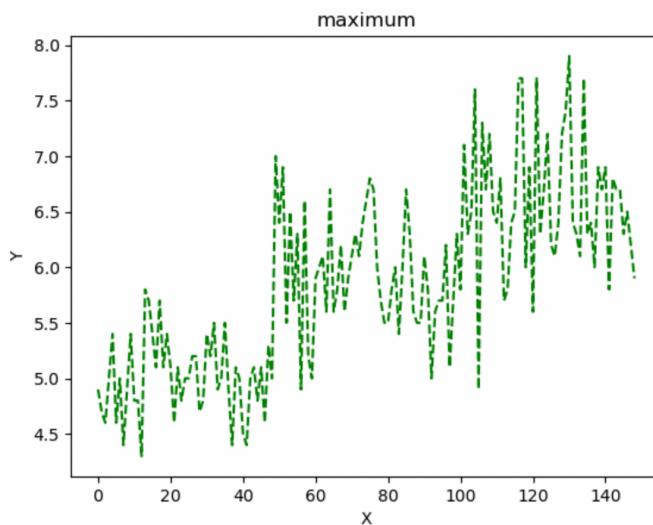
    mean = meanfunc(x)
    meanlist.append(mean)

    std = stdfunc(x)
    stdlist.append(std)
```

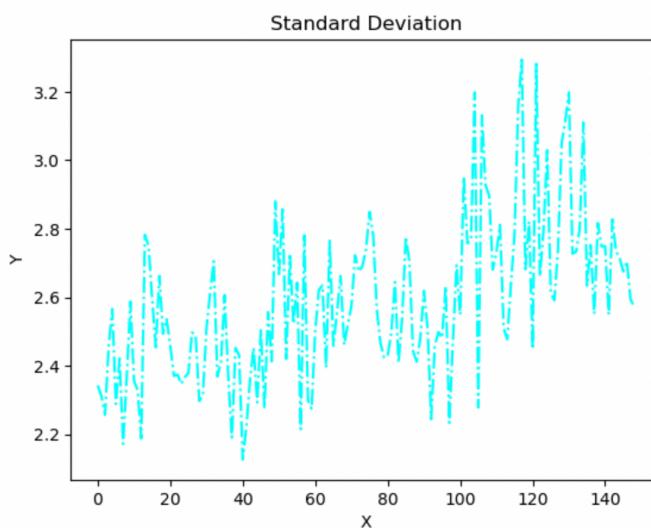
```
[8]: plt.subplot()
plt.plot(minlist, c='b')
plt.title ("minimum")
plt.xlabel('X')
plt.ylabel('Y')
plt.show()
```



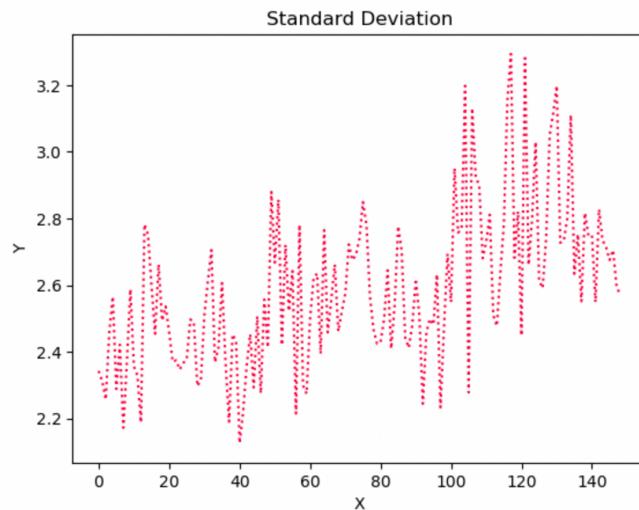
```
[9]: plt.subplot()
plt.plot(maxlist, c='g', linestyle='--')
plt.title ("maximum")
plt.xlabel('X')
plt.ylabel('Y')
plt.show()
```



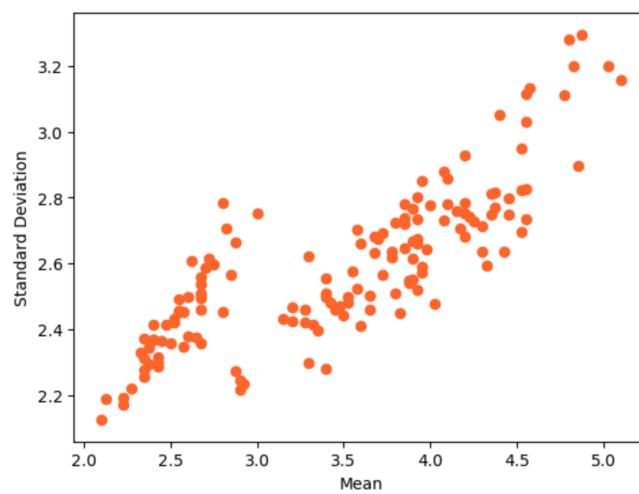
```
[10]: plt.subplot()
plt.plot(stdlist, c="#00FFFF", linestyle='-.')
plt.title ("Standard Deviation")
plt.xlabel('X')
plt.ylabel('Y')
plt.show()
```



```
[11]: plt.subplot()
plt.plot(stdlist, c="#FF0040", linestyle=':')
plt.title ("Standard Deviation")
plt.xlabel('X')
plt.ylabel('Y')
plt.show()
```



```
[12]: plt.subplot()
plt.scatter(meanlist,stdlist, c = "#FE642E")
plt.xlabel('Mean')
plt.ylabel('Standard Deviation')
plt.show()
```



```
[13]: fig = plt.figure()
ax = Axes3D(fig)
ax.scatter(meanlist, minlist, maxlist, c = '#FA5882')
ax.set_xlabel('mean')
ax.set_ylabel('min')
ax.set_zlabel('max')
plt.show()
```

