

# Importing Libraries

```
In [5]: 1 import pandas as pd
        2 import numpy as np
        3 import matplotlib.pyplot as plt
        4
```

## Loading data

### Iris dataset

```
In [6]: 1 data=pd.read_csv("Iris.csv")
```

```
In [7]: 1 data
```

Out[7]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...	...
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 6 columns

In [12]:

```
1
2 data.describe()
```

Out[12]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm
<b>count</b>	150.000000	150.000000	150.000000	150.000000	150.000000
<b>mean</b>	75.500000	5.843333	3.054000	3.758667	1.198667
<b>std</b>	43.445368	0.828066	0.433594	1.764420	0.763161
<b>min</b>	1.000000	4.300000	2.000000	1.000000	0.100000
<b>25%</b>	38.250000	5.100000	2.800000	1.600000	0.300000
<b>50%</b>	75.500000	5.800000	3.000000	4.350000	1.300000
<b>75%</b>	112.750000	6.400000	3.300000	5.100000	1.800000
<b>max</b>	150.000000	7.900000	4.400000	6.900000	2.500000

In [13]:

```
1 data.info()
2
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
#   Column          Non-Null Count  Dtype
---  -
0   Id               150 non-null    int64
1   SepalLengthCm   150 non-null    float64
2   SepalWidthCm    150 non-null    float64
3   PetalLengthCm   150 non-null    float64
4   PetalWidthCm    150 non-null    float64
5   Species         150 non-null    object
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
```

In [29]:

```
1 data['Species']
```

Out[29]: &lt;bound method Series.unique of 0 Iris-setosa

```
1 Iris-setosa
2 Iris-setosa
3 Iris-setosa
4 Iris-setosa
...
145 Iris-virginica
146 Iris-virginica
147 Iris-virginica
148 Iris-virginica
149 Iris-virginica
Name: Species, Length: 150, dtype: object>
```

In [17]:

```
1 df
```

Out[17]:

	A	B	C
0	a	0	a
1	b	b	@
2	c	c	w

## central tendency measures

In [30]:

```
1 data.mean()
```

Out[30]:

Id	75.500000
SepalLengthCm	5.843333
SepalWidthCm	3.054000
PetalLengthCm	3.758667
PetalWidthCm	1.198667

dtype: float64

In [31]:

```
1 data.median()
```

Out[31]:

Id	75.50
SepalLengthCm	5.80
SepalWidthCm	3.00
PetalLengthCm	4.35
PetalWidthCm	1.30

dtype: float64

In [32]:

```
1
2 data.mode()
```

Out[32]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
<b>0</b>	1	5.0	3.0	1.5	0.2	Iris-setosa
<b>1</b>	2	NaN	NaN	NaN	NaN	Iris-versicolor
<b>2</b>	3	NaN	NaN	NaN	NaN	Iris-virginica
<b>3</b>	4	NaN	NaN	NaN	NaN	NaN
<b>4</b>	5	NaN	NaN	NaN	NaN	NaN
...	...	...	...	...	...	...
<b>145</b>	146	NaN	NaN	NaN	NaN	NaN
<b>146</b>	147	NaN	NaN	NaN	NaN	NaN
<b>147</b>	148	NaN	NaN	NaN	NaN	NaN
<b>148</b>	149	NaN	NaN	NaN	NaN	NaN
<b>149</b>	150	NaN	NaN	NaN	NaN	NaN

150 rows × 6 columns

In [33]:

```
1 data.dtypes
```

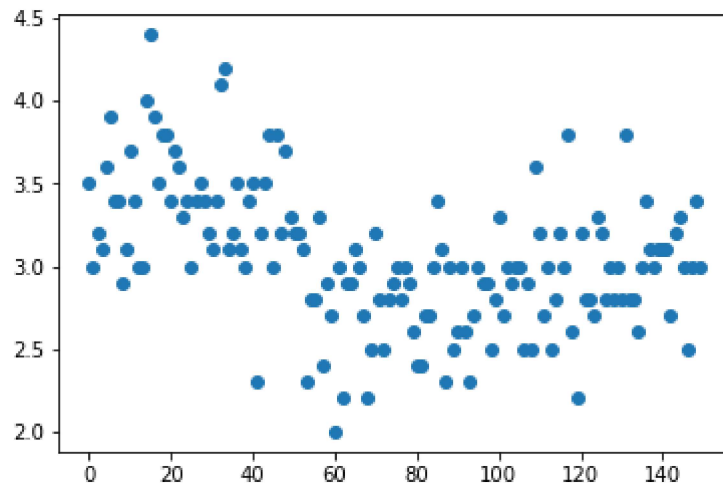
```
Out[33]: Id                int64
SepalLengthCm            float64
SepalWidthCm             float64
PetalLengthCm            float64
PetalWidthCm             float64
Species                  object
dtype: object
```

In [34]:

```
1 %matplotlib inline
```

```
In [36]: 1 mt.scatter(data.index,data['SepalWidthCm'])#only for univaritat data
          2
```

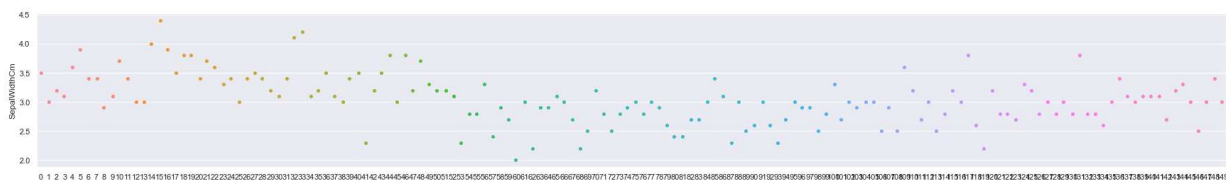
Out[36]: <matplotlib.collections.PathCollection at 0x260b09de250>



```
In [37]: 1 import seaborn as sns
```

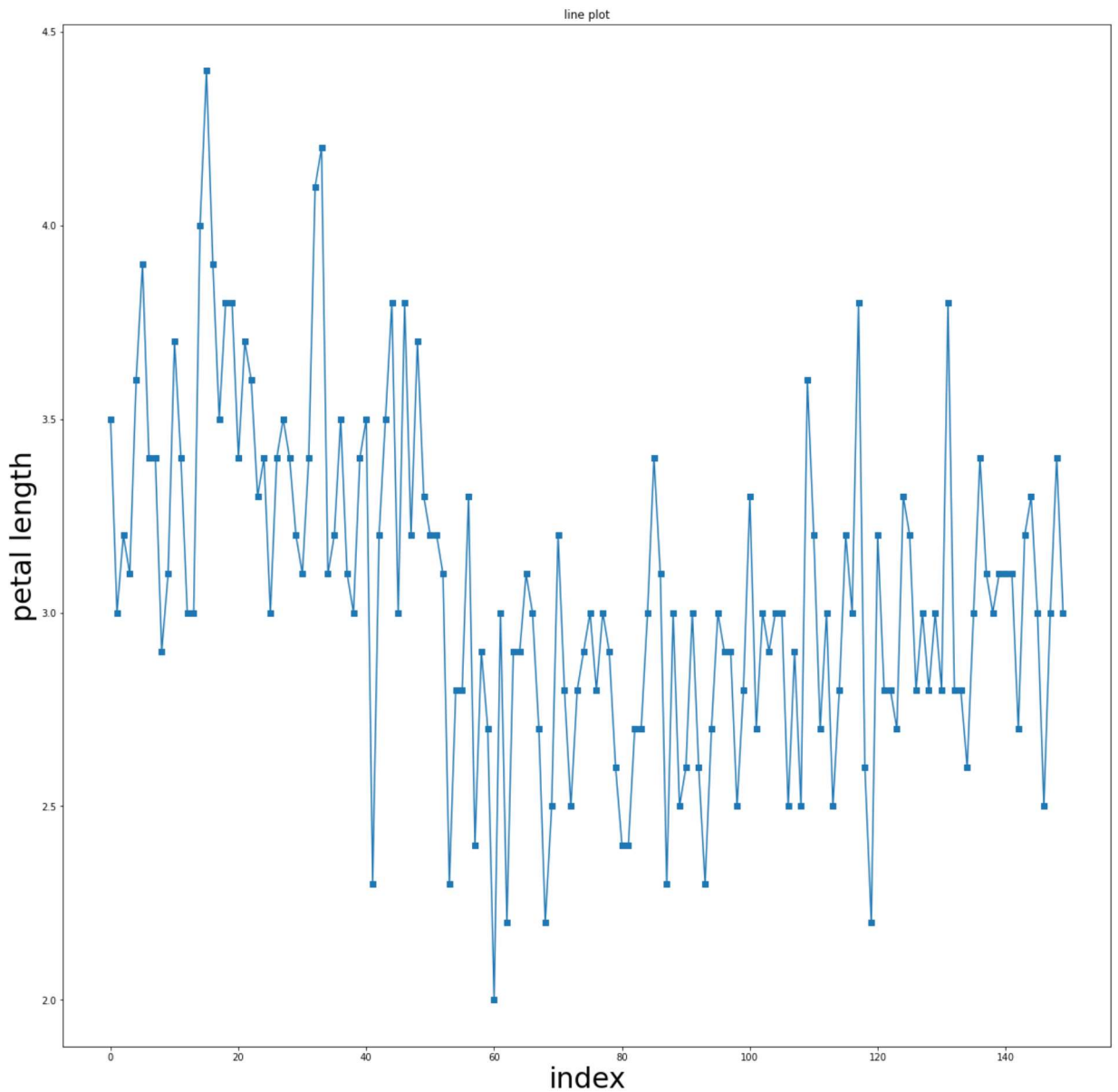
```
In [57]: 1 sns.set(rc={"figure.figsize":(30, 4)})
          2
          3 sns.stripplot(x=data.index,y=data['SepalWidthCm'])
```

Out[57]: <AxesSubplot:ylabel='SepalWidthCm'>



```
In [48]: 1
2 mt.figure(figsize=(20,20))
3 mt.title("line plot")
4 mt.xlabel('index',fontsize=30)
5 mt.ylabel('petal length',fontsize=30)
6 mt.plot(data.index,data['SepalWidthCm'],marker='s')
7 mt.legend
```

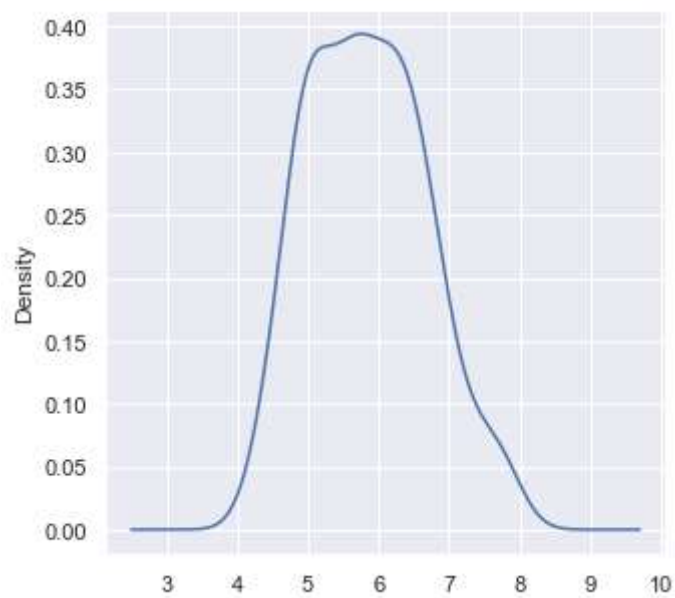
```
Out[48]: <function matplotlib.pyplot.legend(*args, **kwargs)>
```



```
In [61]: 1  
        2 l=range(100)
```

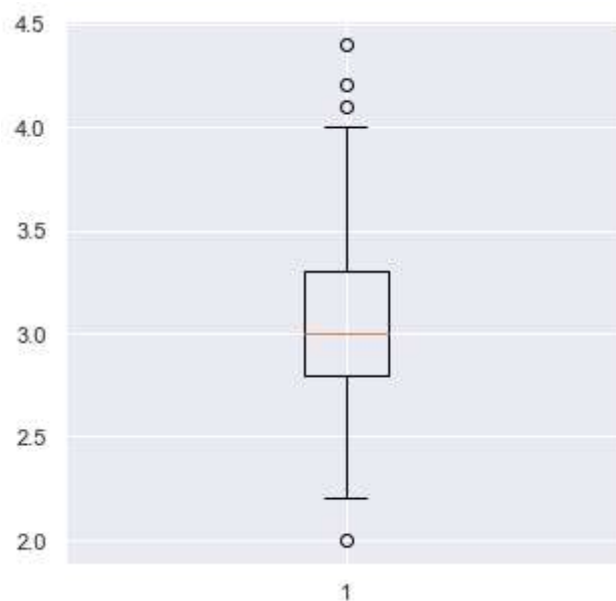
```
In [66]: 1 mt.figure(figsize=(5,5))  
        2 data['SepalLengthCm'].plot(kind='density')
```

Out[66]: <AxesSubplot:ylabel='Density'>



```
In [68]: 1 mt.figure(figsize=(5,5))
        2 mt.boxplot(data['SepalWidthCm'])
```

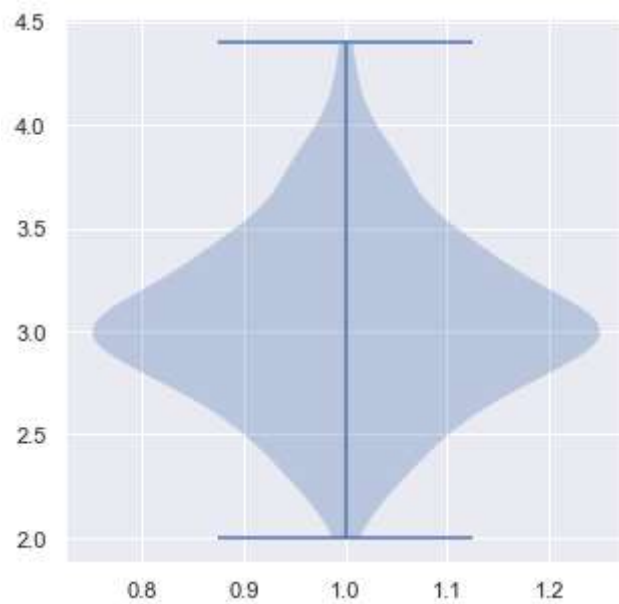
```
Out[68]: {'whiskers': [<matplotlib.lines.Line2D at 0x260b5ea1190>,
<matplotlib.lines.Line2D at 0x260b5e8c400>],
'caps': [<matplotlib.lines.Line2D at 0x260b7428250>,
<matplotlib.lines.Line2D at 0x260b7428910>],
'boxes': [<matplotlib.lines.Line2D at 0x260b5ea1c40>],
'medians': [<matplotlib.lines.Line2D at 0x260b7428c70>],
'fliers': [<matplotlib.lines.Line2D at 0x260b7428fd0>],
'means': []}
```





```
In [69]: 1 mt.figure(figsize=(5,5))  
2 mt.violinplot(data['SepalWidthCm'])
```

```
Out[69]: {'bodies': [<matplotlib.collections.PolyCollection at 0x260b74112b0>],  
'cmaxes': <matplotlib.collections.LineCollection at 0x260b5eaf070>,  
'cmins': <matplotlib.collections.LineCollection at 0x260b5ea1b50>,  
'cbars': <matplotlib.collections.LineCollection at 0x260b5eaf4c0>}
```



```
In [ ]: 1
```