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

In [3]:
```
df=pd.read_csv('IRIS.csv')
```

In [4]:
```
df.head()
```

Out[4]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   sepal_length  150 non-null    float64
 1   sepal_width   150 non-null    float64
 2   petal_length  150 non-null    float64
 3   petal_width   150 non-null    float64
 4   species       150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

In [8]:
```
df.isnull().sum()
```

Out[8]:
```
sepal_length    0
sepal_width     0
petal_length    0
petal_width     0
species         0
dtype: int64
```

In [11]:
```
print("Statistical info of numerical Columns:")
df.describe()
```

```
Statistical info of numerical Columns:
```

Out[11]:

	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

In [12]:
```
df.columns=('SL','SW','PL','PW','Species')
print(df.head())
```

```
    SL   SW   PL   PW      Species
0  5.1  3.5  1.4  0.2  Iris-setosa
1  4.9  3.0  1.4  0.2  Iris-setosa
2  4.7  3.2  1.3  0.2  Iris-setosa
3  4.6  3.1  1.5  0.2  Iris-setosa
4  5.0  3.6  1.4  0.2  Iris-setosa
```

In [16]:
```
# group wise statistical summary
print("sepal_length :")
df['SL'].groupby(df['Species']).describe()
```

```
sepal_length :
```

Out[16]:

Species	count	mean	std	min	25%	50%	75%	max
Iris-setosa	50.0	5.006	0.352490	4.3	4.800	5.0	5.2	5.8
Iris-versicolor	50.0	5.936	0.516171	4.9	5.600	5.9	6.3	7.0
Iris-virginica	50.0	6.588	0.635880	4.9	6.225	6.5	6.9	7.9

In [17]:
```
print("sepal_width :")
df['SW'].groupby(df['Species']).describe()
```

```
sepal_width :
```

Out[17]:

Species	count	mean	std	min	25%	50%	75%	max
Iris-setosa	50.0	3.418	0.381024	2.3	3.125	3.4	3.675	4.4
Iris-versicolor	50.0	2.770	0.313798	2.0	2.525	2.8	3.000	3.4
Iris-virginica	50.0	2.974	0.322497	2.2	2.800	3.0	3.175	3.8

In [18]:
```
print("petal_length :")
df['PL'].groupby(df['Species']).describe()
```

```
petal_length :
```

Out[18]:

Species	count	mean	std	min	25%	50%	75%	max
Iris-setosa	50.0	1.464	0.173511	1.0	1.4	1.50	1.575	1.9
Iris-versicolor	50.0	4.260	0.469911	3.0	4.0	4.35	4.600	5.1
Iris-virginica	50.0	5.552	0.551895	4.5	5.1	5.55	5.875	6.9

In [19]:
```
print("petal_width :")
df['PW'].groupby(df['Species']).describe()
```

```
petal_width :
```

Out[19]:

Species	count	mean	std	min	25%	50%	75%	max
Iris-setosa	50.0	0.244	0.107210	0.1	0.2	0.2	0.3	0.6
Iris-versicolor	50.0	1.326	0.197753	1.0	1.2	1.3	1.5	1.8
Iris-virginica	50.0	2.026	0.274650	1.4	1.8	2.0	2.3	2.5