Iris DataSet

In [1]:

```
import pandas as pd
```

In [2]:

```
data=pd.read_csv("iris_dataset.csv")
df=pd.DataFrame(data)
df
```

Out[2]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
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
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

In [36]:

```
print(df.dtypes)
print(df.describe())
```

```
sepal length (cm)    float64
sepal width (cm)     float64
petal length (cm)    float64
petal width (cm)     float64
target                object
dtype: object
       sepal length (cm)  sepal width (cm)  petal length (cm)  \
count         150.000000        150.000000         150.000000
mean            5.843333          3.054000           3.758667
std             0.828066          0.433594           1.764420
min             4.300000          2.000000           1.000000
25%             5.100000          2.800000           1.600000
50%             5.800000          3.000000           4.350000
75%             6.400000          3.300000           5.100000
max             7.900000          4.400000           6.900000

       petal width (cm)
count        150.000000
mean           1.198667
std            0.763161
min            0.100000
25%            0.300000
50%            1.300000
75%            1.800000
max            2.500000
```

In [35]:

```
#Mean
print("Mean of Iris dataset \n",df.groupby('target').mean(),"\n")
#Median
print("Median of Iris dataset \n",df.groupby('target').median(),"\n")
#Mode
print("Mode of Iris dataset \n",df.mode(axis=1, numeric_only=True),"\n") #column
print("Mode of Iris dataset \n",df.mode(axis=0, numeric_only=False),"\n") #row
#Standard Deviation
print("STD of Iris dataset \n",df.groupby('target').std(),"\n")
#Varience
print("Variance of Iris dataset \n",df.groupby('target').var(),"\n")
#Maximum
print("Max of Iris dataset \n",df.groupby('target').max(),"\n")
#Minimum
print("Min of Iris dataset \n",df.groupby('target').min(),"\n")
```

```
Mean of Iris dataset
                 sepal length (cm)  sepal width (cm)  petal length (cm)
\
target
Iris-setosa                  5.006             3.418              1.464
Iris-versicolor              5.936             2.770              4.260
Iris-virginica               6.588             2.974              5.552

                petal width (cm)
target
Iris-setosa                0.244
Iris-versicolor            1.326
Iris-virginica             2.026

Median of Iris dataset
                 sepal length (cm)  sepal width (cm)  petal length (cm)
\
target
Iris-setosa                   5.0               3.4               1.50
Iris-versicolor               5.9               2.8               4.35
Iris-virginica                6.5               3.0               5.55

                petal width (cm)
target
Iris-setosa                  0.2
Iris-versicolor              1.3
Iris-virginica               2.0

Mode of Iris dataset
        0    1    2    3
0    0.2  1.4  3.5  5.1
1    0.2  1.4  3.0  4.9
2    0.2  1.3  3.2  4.7
3    0.2  1.5  3.1  4.6
4    0.2  1.4  3.6  5.0
..   ...  ...  ...  ...
145  2.3  3.0  5.2  6.7
146  1.9  2.5  5.0  6.3
147  2.0  3.0  5.2  6.5
148  2.3  3.4  5.4  6.2
149  1.8  3.0  5.1  5.9

[150 rows x 4 columns]

Mode of Iris dataset
    sepal length (cm)  sepal width (cm)  petal length (cm)  petal width (c
m)  \
0                 5.0               3.0                1.5               0.
2
1                 NaN               NaN                NaN               Na
N
2                 NaN               NaN                NaN               Na
N

            target
0      Iris-setosa
1  Iris-versicolor
2   Iris-virginica

STD of Iris dataset
                 sepal length (cm)  sepal width (cm)  petal length (cm)
```

```
\
target
Iris-setosa               0.352490          0.381024           0.173511
Iris-versicolor           0.516171          0.313798           0.469911
Iris-virginica            0.635880          0.322497           0.551895

                 petal width (cm)
target
Iris-setosa              0.107210
Iris-versicolor          0.197753
Iris-virginica           0.274650

Variance of Iris dataset
                  sepal length (cm)  sepal width (cm)  petal length (cm)
\
target
Iris-setosa               0.124249          0.145180           0.030106
Iris-versicolor           0.266433          0.098469           0.220816
Iris-virginica            0.404343          0.104004           0.304588

                 petal width (cm)
target
Iris-setosa              0.011494
Iris-versicolor          0.039106
Iris-virginica           0.075433

Max of Iris dataset
                  sepal length (cm)  sepal width (cm)  petal length (cm)
\
target
Iris-setosa                   5.8               4.4                1.9
Iris-versicolor               7.0               3.4                5.1
Iris-virginica                7.9               3.8                6.9

                 petal width (cm)
target
Iris-setosa                   0.6
Iris-versicolor               1.8
Iris-virginica                2.5

Min of Iris dataset
                  sepal length (cm)  sepal width (cm)  petal length (cm)
\
target
Iris-setosa                   4.3               2.3                1.0
Iris-versicolor               4.9               2.0                3.0
Iris-virginica                4.9               2.2                4.5

                 petal width (cm)
target
Iris-setosa                   0.1
Iris-versicolor               1.0
Iris-virginica                1.4
```

Academic DataSet

In [40]:

```
data2=pd.read_csv("DataStudents2.csv")
df2=pd.DataFrame(data2)
df2
```

Out[40]:

	RollNo	Name	Age	Maths	Science	English	Total	Average	Class
0	1	Anish	18	25.0	35	56	116.0	NaN	A
1	2	Aasawari	20	33.0	78	34	145.0	48.3	B
2	3	Aditya	11	90.0	33	22	145.0	48.3	B
3	4	Apoorva	22	45.0	88	56	189.0	63.0	C
4	5	Anil	12	66.0	43	88	197.0	65.7	A
5	6	Bablu	13	NaN	35	53	110.0	NaN	B
6	7	Chetan	12	56.0	66	78	NaN	66.7	A
7	8	Chinmay	14	56.0	36	68	160.0	53.3	A
8	9	Chitra	15	67.0	22	32	121.0	40.3	C
9	10	Diya	16	54.0	78	88	220.0	73.3	A
10	11	Deepak	34	33.0	44	71	148.0	49.3	B
11	12	Dilip	18	87.0	89	37	213.0	NaN	C
12	13	Esha	19	89.0	53	40	182.0	60.7	A
13	14	Fatima	17	34.0	45	78	157.0	52.3	B
14	15	Faiz	11	32.0	51	27	110.0	36.7	B
15	16	Gaurav	19	80.0	30	28	138.0	46.0	A
16	17	Hitesh	20	NaN	74	30	NaN	64.7	C
17	18	Isha	14	50.0	90	56	196.0	65.3	C
18	19	Ishan	16	40.0	42	89	171.0	57.0	A
19	20	Jay	18	48.0	72	90	210.0	70.0	B

Mean

In [43]:

```
print("Mean of Academic dataset \n",df2.groupby('Class').mean(),"\n")
```

```
Mean of Academic dataset
           RollNo        Age  Maths    Science    English       Total  \
Class
A       9.875000  15.750000  58.25  47.875000  66.875000  169.142857
B      10.142857  17.714286  45.00  51.142857  53.571429  146.428571
C      12.000000  17.800000  62.25  72.600000  42.200000  179.750000

         Average
Class
A      60.385714
B      50.816667
C      58.325000
```

Median

In [44]:

```
print("Median of Academic dataset \n",df2.groupby('Class').median(),"\n")
```

```
Median of Academic dataset
        RollNo   Age  Maths  Science  English  Total  Average
Class
A         9.0  16.0   56.0     42.5     73.0  171.0    60.70
B        11.0  17.0   33.5     45.0     53.0  145.0    48.80
C        12.0  18.0   58.5     88.0     37.0  192.5    63.85
```

Mode

In [45]:

```
print("Mode of Academic dataset \n",df2.mode(axis=1, numeric_only=True),"\n") #column
print("Mode of Academic dataset \n",df2.mode(axis=0, numeric_only=False),"\n") #row
```

```
Mode of Academic dataset
        0     1     2     3      4      5      6
0    1.0  18.0  25.0  35.0   56.0  116.0    NaN
1    2.0  20.0  33.0  34.0   48.3   78.0  145.0
2    3.0  11.0  22.0  33.0   48.3   90.0  145.0
3    4.0  22.0  45.0  56.0   63.0   88.0  189.0
4    5.0  12.0  43.0  65.7   66.0   88.0  197.0
5    6.0  13.0  35.0  53.0  110.0    NaN    NaN
6    7.0  12.0  56.0  66.0   66.7   78.0    NaN
7    8.0  14.0  36.0  53.3   56.0   68.0  160.0
8    9.0  15.0  22.0  32.0   40.3   67.0  121.0
9   10.0  16.0  54.0  73.3   78.0   88.0  220.0
10  11.0  33.0  34.0  44.0   49.3   71.0  148.0
11  12.0  18.0  37.0  87.0   89.0  213.0    NaN
12  13.0  19.0  40.0  53.0   60.7   89.0  182.0
13  14.0  17.0  34.0  45.0   52.3   78.0  157.0
14  11.0  15.0  27.0  32.0   36.7   51.0  110.0
15  16.0  19.0  28.0  30.0   46.0   80.0  138.0
16  17.0  20.0  30.0  64.7   74.0    NaN    NaN
17  14.0  18.0  50.0  56.0   65.3   90.0  196.0
18  16.0  19.0  40.0  42.0   57.0   89.0  171.0
19  18.0  20.0  48.0  70.0   72.0   90.0  210.0

Mode of Academic dataset
     RollNo      Name   Age  Maths  Science  English  Total  Average Class
0         1  Aasawari  18.0   33.0     35.0     56.0  110.0     48.3     A
1         2    Aditya   NaN   56.0     78.0      NaN  145.0      NaN   NaN
2         3      Anil   NaN    NaN      NaN      NaN    NaN      NaN   NaN
3         4     Anish   NaN    NaN      NaN      NaN    NaN      NaN   NaN
4         5   Apoorva   NaN    NaN      NaN      NaN    NaN      NaN   NaN
5         6     Bablu   NaN    NaN      NaN      NaN    NaN      NaN   NaN
6         7    Chetan   NaN    NaN      NaN      NaN    NaN      NaN   NaN
7         8   Chinmay   NaN    NaN      NaN      NaN    NaN      NaN   NaN
8         9    Chitra   NaN    NaN      NaN      NaN    NaN      NaN   NaN
9        10    Deepak   NaN    NaN      NaN      NaN    NaN      NaN   NaN
10       11     Dilip   NaN    NaN      NaN      NaN    NaN      NaN   NaN
11       12      Diya   NaN    NaN      NaN      NaN    NaN      NaN   NaN
12       13      Esha   NaN    NaN      NaN      NaN    NaN      NaN   NaN
13       14      Faiz   NaN    NaN      NaN      NaN    NaN      NaN   NaN
14       15    Fatima   NaN    NaN      NaN      NaN    NaN      NaN   NaN
15       16    Gaurav   NaN    NaN      NaN      NaN    NaN      NaN   NaN
16       17    Hitesh   NaN    NaN      NaN      NaN    NaN      NaN   NaN
17       18      Isha   NaN    NaN      NaN      NaN    NaN      NaN   NaN
18       19     Ishan   NaN    NaN      NaN      NaN    NaN      NaN   NaN
19       20       Jay   NaN    NaN      NaN      NaN    NaN      NaN   NaN
```

Standard Deviation

In [46]:

```
print("STD of Academic dataset \n",df2.groupby('Class').std(),"\n")
```

```
STD of Academic dataset
          RollNo       Age      Maths    Science    English      Total  \
Class
A       5.914570  2.866058  20.513062  16.677080  23.479094  35.139857
B       6.718843  7.994045  22.856071  17.487410  26.813287  33.698947
C       5.787918  3.346640  18.997807  29.031018  12.853015  40.442346

         Average
Class
A       9.161592
B      10.811552
C      12.056084
```

Varience

In [49]:

```
print("Variance of Academic dataset \n",df2.groupby('Class').var())
```

```
Variance of Academic dataset
           RollNo        Age       Maths     Science     English        To
tal  \
Class
A       34.982143   8.214286  420.785714  278.125000  551.267857  1234.8095
24
B       45.142857  63.904762  522.400000  305.809524  718.952381  1135.6190
48
C       33.500000  11.200000  360.916667  842.800000  165.200000  1635.5833
33

          Average
Class
A       83.934762
B      116.889667
C      145.349167
```

Maximum

In [50]:

```
print("Max of Academic dataset \n",df2.groupby('Class').max(),"\n")
```

```
Max of Academic dataset
        RollNo   Name  Age  Maths  Science  English  Total  Average
Class
A           19  Ishan   19   89.0       78       89  220.0     73.3
B           20    Jay   34   90.0       78       90  210.0     70.0
C           18   Isha   22   87.0       90       56  213.0     65.3
```

Minimum

In [51]:

```
print("Min of Academic dataset \n",df2.groupby('Class').min(),"\n")
```

```
Min of Academic dataset
        RollNo      Name  Age  Maths  Science  English  Total  Average
Class
A           1      Anil   12   25.0       30       28  116.0     46.0
B           2  Aasawari   11   32.0       33       22  110.0     36.7
C           4   Apoorva   14   45.0       22       30  121.0     40.3
```