

Ex. No.: 2 Write a Program for Mean, Median, Mode, Percentile, Standard Deviation and Variance

AIM:

To write a Python program to calculate Mean, Median, Mode, Percentile, Standard Deviation and Variance by using the given series and csv files.

(i) Program (By using the given series):

```
import numpy as np
import statistics as stat
speed=[99,86,87,88,111,86,103,87,94,78,77,85,86]
mean=np.mean(speed)
median=np.median(speed)
mode=stat.mode(speed)
sd=np.std(speed)
variance=np.var(speed)
p1=np.percentile(speed,25)
p2=np.percentile(speed,50)
p3=np.percentile(speed,75)
p4=np.percentile(speed,100)
print("MEAN:", mean)
print("MEDIAN:", median)
print("MODE:", mode)
print("STANDARD DEVIATION:", sd)
print("VARIANCE:", variance)
print("First Quartile or 25% Percentile:", p1)
print("Second Quartile or Median or 50% Percentile:", p2)
print("Third Quartile or 75% Percentile:", p3)
print("Fourth Quartile or 100% Percentile:", p4)
```

Output:

```
MEAN: 89.76923076923077
MEDIAN: 87.0
MODE: 86
STANDARD DEVIATION: 9.258292301032677
VARIANCE: 85.71597633136093
First Quartile or 25% Percentile: 86.0
Second Quartile or Median or 50% Percentile: 87.0
Third Quartile or 75% Percentile: 94.0
Fourth Quartile or 100% Percentile: 111.0
```

(ii) Program (By using the csv files):

```
import numpy as np
import pandas as pd
df = pd.read_csv('book.csv')
mean=df.mean(numeric_only= True)
median=df.median(numeric_only= True)
mode=df.mode(numeric_only = True)
sd=df.std(numeric_only= True)
mode_value=df['Duration'].mode()
p1=df['Duration'].quantile(0.25)
percentile=df['Pulse'].quantile([0.25,0.5,0.75])
print("MEAN:\n", mean)
print("MEDIAN:\n", median)
print("Mode:", mode)
print("STANDARD DEVIATION:\n", sd)
print("Mode (Duration):", mode_value)
print("First Quartile(Duration):", p1)
print("Percentile (Pulse):",percentile)
```

Output:

MEAN:

```
S. No.      6.000000
Duration    52.272727
Pulse      121.818182
Maxpule     163.818182
calories    521.363636
dtype: float64
```

MEDIAN:

```
S. No.      6.0
Duration    54.0
Pulse      123.0
Maxpule     142.0
calories    546.0
dtype: float64
```

```
Mode:  S. No.  Duration  Pulse  Maxpule  calories
0      1      45.0    125.0    123.0     546.0
1      2      54.0     NaN     NaN       NaN
2      3      NaN     NaN     NaN       NaN
3      4      NaN     NaN     NaN       NaN
```

4	5	NaN	NaN	NaN	NaN
5	6	NaN	NaN	NaN	NaN
6	7	NaN	NaN	NaN	NaN
7	8	NaN	NaN	NaN	NaN
8	9	NaN	NaN	NaN	NaN
9	10	NaN	NaN	NaN	NaN
10	11	NaN	NaN	NaN	NaN

STANDARD DEVIATION:

S. No. 3.316625

Duration 7.156688

Pulse 12.742199

Maxpule 90.766534

calories 85.054421

dtype: float64

Mode (Duration): 0 45

1 54

Name: Duration, dtype: int64

First Quartile(Duration): 46.0

Percentile (Pulse): 0.25 111.5

0.50 123.0

0.75 128.5

Name: Pulse, dtype: float64