# Experiment-3

Write a Program to find the mean, median, standard deviation and mode using user defined functions.

**Aim:** Program to find the mean, median, standard deviation and mode using user defined functions.

**User defined  functions:**

**Program:**

```python
def mean_vec(arr):
    avg=sum(arr)/len(arr)
    return avg

def med_vec(arr):
    if(len(arr)%2==0):
        return (sorted(arr)[(len(arr)//2)-1]/2)+(sorted(arr)[len(arr)//2]/2)
    return sorted(arr)[len(arr)//2]

def mode_arr(arr):
    max_count = 0
    mode = 0
    for i in arr:
        if arr.count(i) > max_count:
            max_count = arr.count(i)
            mode = i
    return mode

def standarddev_vec(arr):
    avg=sum(arr)/len(arr)
    var=sum([((x-avg)**2) for x in arr])/len(arr)
    return var**(1/2)

arr=[15,25,36,26,26,26,21,8,3,5,12,21]
print(arr)
print("Mean of the array:",mean_vec(arr))
print("Median of the array:",med_vec(arr))
print("Mode of the array:",mode_arr(arr))
print("Standard deviation of the array:",standarddev_vec(arr))
```

**Output:**

```
[15, 25, 36, 26, 26, 26, 21, 8, 3, 5, 12, 21]
Mean of the array: 18.666666666666668
```

```
Median of the array: 21.0
Mode of the array: 26
Standard deviation of the array: 9.646530752325187
```

## Pre defined functions:

## Program:

import numpy as np

import statistics

arr=[15,25,36,26,26,26,21,8,3,5,12,21]

print(np.mean(arr))

print(np.median(arr))

print(statistics.mode(arr))

print(np.std(arr))

## Output:

```
18.666666666666668
21.0
26
9.646530752325187
```