In [ ]:
```
#Calculating mean,median,mode,variance,standard variation using own functions
```

In [1]:
```
class Statistics:
    def __init__(self,data):
        self.variable = data
    def mean(self):
        n = len(data)
        mean_value = sum(data) / n
        return mean_value
    def median(self):
        n = len(data)
        index = n // 2
        if n % 2:                                              # Sample with an odd number of observations
            return sorted(data)[index]
        return sum(sorted(data)[index - 1:index + 1]) / 2      # Sample with an even number of observations

    def mode(self):
        data.sort()
        L1=[]
        i = 0
        while i < len(data):
             L1.append(data.count(data[i]))
             i += 1
             d1 = dict(zip(data, L1))
             d2={k for (k,v) in d1.items() if v == max(L1) }
        return d2

    def var(self):
        n = len(data)
        mean = sum(data) / n
        deviations = [(i - mean) ** 2 for i in data]
        variance = sum(deviations) / n
        return variance

    def std(Self):
        import math
        n = len(data)
        mean = sum(data) / n
        deviations = [(i - mean) ** 2 for i in data]
        variance = sum(deviations) / n
        std_val = math.sqrt(variance)
        return std_val


data=[1,1,2,2,3,3,4,4,5,6,7,2,2,3]

class_obj = Statistics(data)   #varibales
print("Mean:",class_obj.mean())
print("Median:",class_obj.median())
print("Mode:",class_obj.mode())
print("Variance:",class_obj.var())
print("Standard Deviation:",class_obj.std())
```

```
Mean: 3.2142857142857144
Median: 3.0
Mode: {2}
Variance: 3.025510204081633
Standard Deviation: 1.7393993802694174
```

In [ ]:
```
#Calculating mean,median,mode,variance,standard variation using builtin functions
```

In [2]:
```
import statistics
import numpy as np

print("Mean of the sample is ",(statistics.mean(data)))
print("Median of the sample is ",(statistics.median(data)))
print("Mode of the sample is ",(statistics.mode(data)))
print("Variance of the sample is ",np.var(data))
print("Standard Deviation of the sample is ",(statistics.stdev(data)))
```

```
Mean of the sample is  3.2142857142857144
Median of the sample is  3.0
Mode of the sample is  2
Variance of the sample is  3.025510204081633
Standard Deviation of the sample is  1.8050600428356278
```

In [ ]: