Output-

[1] 3.391165

Output-

[1] 7.5

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practical-4

4. Using R execute the standard deviation, mean and median.

a. find the standard deviation of following data:
2, 3, 7, 8, 10.

Code-

```
x <- c(2,3,7,8,10)
sd(x)
```

b. find the variance of following data:
1, 2, 3, 4, 5, 6, 7, 8, 9.

Code-

```
x <- c(1,2,3,4,5,6,7,8,9)
var(x)
```

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c) Suppose, CEO yearly compensations are sampled and following (in millions).
12, 0.4 5 2 50 8 3 1 4 0.25 find mean, var, s.d median.

code -

```
> Scal1 = scan()
1: 12 0.4 5 2 50 8 3 1 4 0.25
11
Read 10 items
> mean(scal1)
[1] 8.565

> var(scal1)
[1] 225.5145

> sd(scal1)
[1] 15.01714

> median(scal1)
[1] 3.5
```

Output -

[1] 1.93206

Output -

[1] 5.599587

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Practical - 1

5. Using R execute the softwar computation of Skewnes and Kurtosis.

Code -

```
install.packages("moments")

>time <- c(19,09,19,55,17,89,17,73,25,15+27,27,25,
24,21,65,20,92,22,61,15,71+22,04,22,
60,24,25)

>library(moments)
>skewness(time)

>Kurtosis(time)
```

Output- [1] -4.5644

Output- [1] 1.6991

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practical-6

6. Using R execute the program.

Suppose the manufacturer claims that the mean lifetime of a light bulb is more than 10,000 hours. In a simple of 30 light bulbs, it was found that they only last 9900 hours on average. Assume the population standard deviation is 120 hours. At .05 significance level, can we reject the claim by the manufacturer?

code -

```
> xbar = 9900
> mu0 = 100000
> sigma = 120
> n = 30
> z = (xbar - mu0)/(sigma/sqrt(n))
> z
```

- we then compute the critical value at .05 significance level.

```
> alpha = .05
> t.alpha = qt(1 - alpha, df = n-1)
> t.alpha
```

Output-

'data.frame.': 93 obs. of 27 variables

$ Manufacturer : factor w/32 levels "Acura", "Audi" ..: 1 1 2 2 3 4 4
$ Model : factor w/93 levels "100", "190E", "240" ..: 49 56 9 1
$ Type : factor w/6 levels "Compact", "Large" ..: 4 3 1 3 3 2 .
$ Min.Price : num 12.9 29.2 25.9 30.8 23.7 14.2 2.19 9.22
6 26.3 33 ...
$ Price : num 15.9 33.9 29.1 37.7 30 15.7 10, 8, 23.7 26.3.
$ Max.Price : num 18.8 38.7 32.3 44.6 36.2 17.3 21.7 24.9
$ MPG.City : int 25 18 20 19 2222 19 16 19 16 ..
$ MPG.Highway : int 31 25 26 26 30 31 28 25 27 25 ..
$ AirBags : factor w/3 levels "Driver & passenger" .. : 3 1 2 1 2 2
$ DriveTrain : factor w/3 levels "4WD", "Front" ..: 3 1 2 1 2 2 ..
$ Cylinders : factor w/6 levels "3", "4", "5", "6" ..: 2 4 4 .
$ EngineSize : num 1, 8, 3, 2, 2, 8, 2.8, 3.5, 2.2 ..

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practical-7

7. Using R execute the program.

- we will take the Cars93 data in the "MASS" library which represents the sales of different models of car in the year 1993.

code-

```
> library("MASS")
> print(str(Cars93))
```