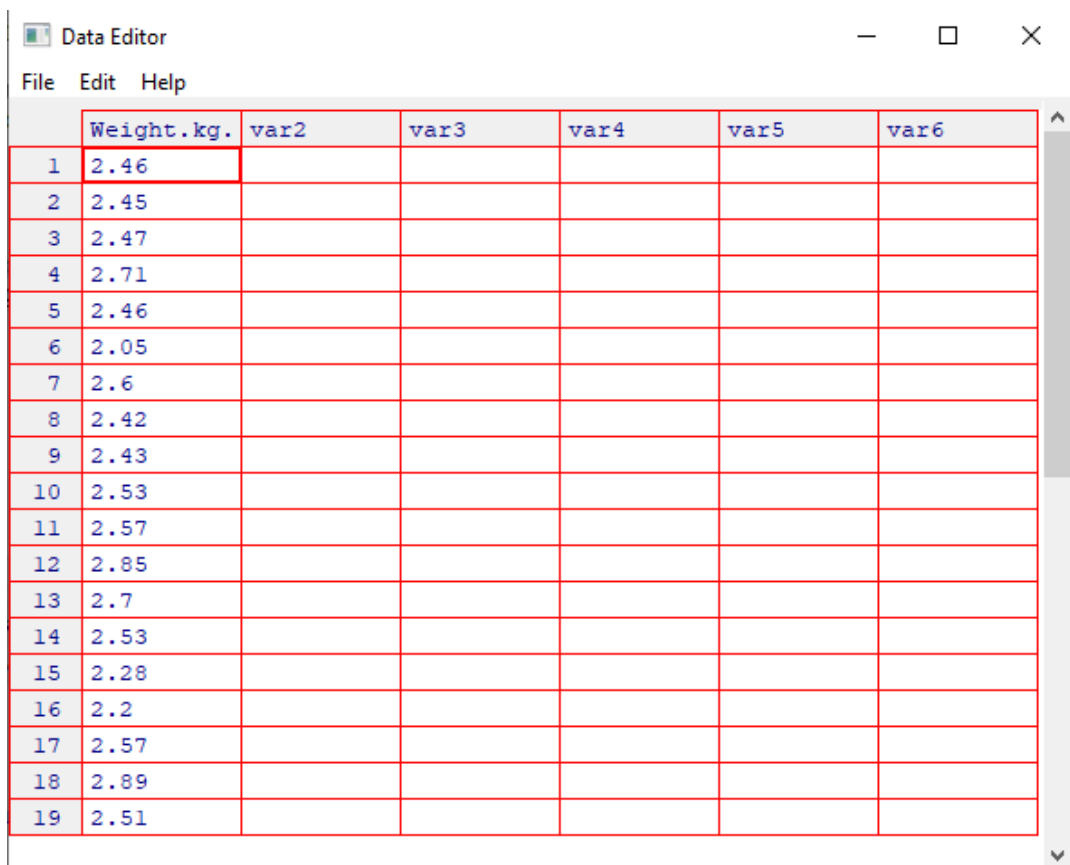# Probability and Statistics - IT2120

Lab sheet 08

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Dataset import:

```
setwd("C:\\Users\\IT24101484\\Desktop\\Lab 08")

# Importing the dataset
data<-read.table("Exercise - LaptopsWeights.txt", header = TRUE)
fix(data)
attach(data)
```

output

	Weight.kg.	var2	var3	var4	var5	var6
1	2.46					
2	2.45					
3	2.47					
4	2.71					
5	2.46					
6	2.05					
7	2.6					
8	2.42					
9	2.43					
10	2.53					
11	2.57					
12	2.85					
13	2.7					
14	2.53					
15	2.28					
16	2.2					
17	2.57					
18	2.89					
19	2.51					

Question 01:

```
 8   # Question 01
 9   # population mean of the laptop bag weights
10   popmean<-mean(Weight.kg.)
11   print(popmean)
12
13   # population variance of the laptop bag weights
14   popvar<-var(Weight.kg.)
15   print(popvar)
16
17   # population standard deviation of the laptop bag weights
18   popsd<-sqrt(popvar)
19   print(popsd)
```

Output

```
> print(popmean)
[1] 2.468
> # population variance of the laptop bag weights
> popvar<-var(Weight.kg.)
> print(popvar)
[1] 0.06559077
> # population standard deviation of the laptop bag weights
> popsd<-sqrt(popvar)
> print(popsd)
[1] 0.2561069
```

Question 02:

```
21   # Question 02
22   samples<-c()
23   n<-c()
24
25 ▾ for (i in 1:25) {
26     s<-sample(Weight.kg., 6, replace = TRUE)
27     samples<-cbind(samples, s)
28     n<-c(n, paste('S', i))
29 ▲ }
30
31   colnames(samples)=n
32   s.means<-apply(samples, 2, mean)
33   s.vars<-apply(samples, 2, var)
34
35   # calculating the sample mean.
36   samplemean<-mean(s.means)
37   print(samplemean)
38
39   # calculating the sample variance.
40   samplevars<-var(s.means)
41   print(samplevars)
42
43   # calculating sample standard deviation.
44   samplesd<-sqrt(samplevars)
45   print(samplesd)
```

Output

```
> # calculating the sample mean.
> samplemean<-mean(s.means)
> print(samplemean)
[1] 2.431467
> # calculating the sample variance.
> samplevars<-var(s.means)
> print(samplevars)
[1] 0.01709753
> # calculating sample standard deviation.
> samplesd<-sqrt(samplevars)
> print(samplesd)
[1] 0.1307575
```

Question 03:

```
47  # Question 03
48  # Comparing the population mean and sample mean
49  popmean
50  samplemean
51
52  # Comparing the population sd and sample sd
53  truevar=popvar/6
54  truesd<-sqrt(truevar)
55  truesd
56  samplesd
```

Output

```
> # Question 03
> # Comparing the population mean and sample mean
> popmean
[1] 2.468
> samplemean
[1] 2.431467
>
> # Comparing the population sd and sample sd
> truevar=popvar/6
> truesd<-sqrt(truevar)
> truesd
[1] 0.1045552
> samplesd
[1] 0.1307575
```