Sri Lanka Institute of Information Technology

Lab Submission
Lab Sheet 08

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Probability and Statistics| IT2120

B.Sc. (Hons) in Information Technology

```r
setwd("C:\\Users\\IT24103866\\Desktop\\IT24103866")
getwd()

data<-read.table("Exercise - LaptopsWeights.txt",header = TRUE)
fix(data)
attach(data)

```

Question 01:

```r
##Question 1
popmn<-mean(data$weight)
popsd<-sd(data$weight)
popvar <- var(data$weight)

popmn
popsd
popvar
```

```
> popmn<-mean(data$weight)
> popsd<-sd(data$weight)
> popvar <- var(data$weight)
> popmn
[1] 2.468
> popsd
[1] 0.2561069
> popvar
[1] 0.06559077
```

Question 02:

```r
##Question 2
samples<<-matrix(nrow = 6,ncol = 25)
n<<-c

#create and assign samples of size 6 for "samples" variable.
for(i in 1:25){
  s <- sample(data$weight, 6, replace=TRUE)
  samples[,i]<-s
  n<<-c(n,paste('S',i))
}


colnames(samples)=n

#sample means and standard deviations
s.means<-apply(samples,2,mean)
s.sds<-apply(samples,2,sd)

s.means
s.sds
```

```
> s.means<-apply(samples,2,mean)
> s.sds<-apply(samples,2,sd)
> s.means
 [1] 2.380000 2.440000 2.311667 2.546667 2.560000 2.323333 2.355000 2.618333 2.486667 2.390000
[11] 2.558333 2.310000 2.558333 2.505000 2.443333 2.438333 2.410000 2.658333 2.548333 2.480000
[21] 2.523333 2.486667 2.570000 2.345000 2.495000
> s.sds
 [1] 0.25628110 0.16970563 0.28484499 0.11552777 0.19266551 0.33880181 0.16133815 0.22631100
 [9] 0.28133017 0.13446189 0.18744777 0.39638365 0.27795083 0.12194261 0.37966652 0.28589625
[17] 0.30066593 0.14162156 0.20213032 0.21372880 0.10424331 0.06713171 0.22882308 0.35926313
[25] 0.19917329
>
```

Question 03:

```
##Question 03
mean.samplemeans<-mean(s.means)
sd.samplemeans<-sd(s.means)

mean.samplemeans
sd.samplemeans

popmn
mean.samplemeans
popsd
popsd/sqrt(6)
sd.samplemeans
```

```
> ##Question 03
> mean.samplemeans<-mean(s.means)
> sd.samplemeans<-sd(s.means)
>
> mean.samplemeans
[1] 2.469667
> sd.samplemeans
[1] 0.09795478
>
> popmn
[1] 2.468
> mean.samplemeans
[1] 2.469667
> popsd
[1] 0.2561069
> popsd/sqrt(6)
[1] 0.1045552
> sd.samplemeans
[1] 0.09795478
>
```

Data	
data	40 obs. of 1 variable
n	List of 26
samples	num [1:6, 1:25] 2.45 2.32 2.05 2.53 2.76 2.17 2.46 2.41 2.2 2.73 ...
Values	
i	25L
mean.samplemeans	2.46966666666667
popmn	2.468
popsd	0.256106948813907
popvar	0.0655907692307692
s	num [1:6] 2.32 2.67 2.75 2.53 2.23 2.47
s.means	num [1:25] 2.38 2.44 2.31 2.55 2.56 ...
s.sds	num [1:25] 0.256 0.17 0.285 0.116 0.193 ...
sd.samplemeans	0.0979547798164484