

Sri Lanka Institute of Information Technology



Lab Submission  
Lab Sheet 08

**IT24103858**

**Samaraweera P.AP. B**

**Probability and Statistics| IT2120**

B.Sc. (Hons) in Information Technology

```

1 setwd("C:\\Users\\Piyumi Samaraweera\\Downloads\\IT24103858")
2 getwd()
3
4 data<-read.table("Exercise - Laptopsweights.txt", header=TRUE)
5 fix(data)
6 attach(data)
7 attach(data)

```

```

##Question 1
popmn<-mean(data$weight)
popstd<-sd(data$weight)
popvar <- var(data$weight)

```

```

popmn
popstd
popvar

```

```

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

```

```

##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
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   |