

## Lab Sheet 08

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1.



```
> setwd("C://Users//Hp//Desktop//IT23286146")
> getwd()
[1] "C:/Users/Hp/Desktop/IT23286146"
>
> data<- read.table("Data - Lab 8.txt",header= TRUE)
> fix(data)
> attach(data)
>
> #Question 01
> popmean<-mean(Nicotine)
> popvar<-var(Nicotine)
>
```

2.

```
<
> #Question 02
> samples<-c()
>
> n<-c()
>
> for(i in 1:30){
+   s<-sample(Nicotine,5,replace=TRUE)
+   samples<-cbind(samples,s)
+   n<-c(n,paste('S',i))
+ }
>
> colnames(samples)=n
>
> s.means<-apply(samples,2,mean)
> s.vars<-apply(samples,2,var)
>
```

3.

```
> #Question 03
> samplemean<-mean(s.means)
> samplevars<-var(s.means)
>
```

4.

```
> #Question 04
> popmean
[1] 1.77425
> samplemean
[1] 1.751267
>
```

5.

```
> #Question 05
> truevar=popvar/5
> truevar
[1] 0.03049117
> samplevars
[1] 0.03337337
```

## Exercise

1.

2.

```

> ##Exercise
> #Part 1
>
> data2<-read.table("Exercise - LaptopsWeights.txt",header=TRUE)
> fix(data)
> attach(data2)
>
> #1
> pop_mean<-mean(Weight.kg.)
> pop_sd<-sd(Weight.kg.)
>
> cat("Population Mean (True Mean):",pop_mean,"\n")
Population Mean (True Mean): 2.468
> cat("Population Standard Deviation (True SD):",pop_sd,"\n")
Population Standard Deviation (True SD): 0.2561069
>
> #2
> samples<-c()
> sample_names <- c()
>
> for (i in 1:25){
+   S <- sample(Weight.kg.,6,replace =TRUE)
+   samples <- cbind(samples,S)
+   sample_names<-c(sample_names, paste('S',i))
+ }
>
> colnames(samples)= sample_names
> s.means<-apply(samples,2,mean)
> s.sds<-apply(samples,2,sd)
>

```

3.

```

> #3
>
> samplemean<-mean(s.means)
> samplesd<-sd(s.means)
>
> pop_mean
[1] 2.468
> pop_sd
[1] 0.2561069
>
> truesd=pop_sd/6
> samplesd
[1] 0.08716406

```