IT24103506 – Siriwardana S.A.D.V.I.

IT2120 - Probability and Statistics | Lab Sheet 08

```
1  setwd("C:\\Users\\vimuk\\OneDrive\\Desktop\\IT24103506")
2
3  data<-read.table("Exercise - LaptopsWeights.txt",header = TRUE)
4  fix(data)
5  attach(data)
6
```

```
> setwd("C:\\Users\\vimuk\\OneDrive\\Desktop\\IT24103506")
> data<-read.table("Exercise - LaptopsWeights.txt",header = TRUE)
> fix(data)
attach(data)
```

Data Editor

File Edit Help

	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					

01)

```
#Question01
popmn<-mean(Weight.kg.)
popmn
popsd<-sd(Weight.kg.)
popsd
```

```
> #Question01
> popmn<-mean(Weight.kg.)
> popmn
[1] 2.468
> popsd<-sd(Weight.kg.)
> popsd
[1] 0.2561069
```

02)

```
#Question02
samples<-c()
n<-c()
for(i in 1:25){
  s<-sample(Weight.kg.,6,replace = TRUE)
  samples<-cbind(samples,s)
  n<-c(n,paste('S',i))
}
colnames(samples)=n
s.means<-apply(samples,2,mean)
s.means
s.sd<-apply(samples,2,sd)
s.sd
```

```
> #Question02
> samples<-c()
> n<-c()
> for(i in 1:25){
+   s<-sample(Weight.kg.,6,replace = TRUE)
+   samples<-cbind(samples,s)
+   n<-c(n,paste('S',i))
+ }
> colnames(samples)=n
> s.means<-apply(samples,2,mean)
> s.means
     S 1      S 2      S 3      S 4      S 5      S 6      S 7      S 8      S 9     S 10     S 11
2.478333 2.556667 2.320000 2.553333 2.526667 2.540000 2.506667 2.128333 2.580000 2.495000 2.550000
    S 12     S 13     S 14     S 15     S 16     S 17     S 18     S 19     S 20     S 21     S 22
2.436667 2.458333 2.581667 2.620000 2.366667 2.356667 2.605000 2.446667 2.371667 2.208333 2.460000
    S 23     S 24     S 25
2.328333 2.428333 2.388333
> s.sd<-apply(samples,2,sd)
> s.sd
      S 1       S 2       S 3       S 4       S 5       S 6       S 7       S 8       S 9      S 10
0.2133932 0.3695763 0.3628774 0.2434475 0.1434805 0.2587663 0.2597435 0.2698456 0.1113553 0.1504327
     S 11      S 12      S 13      S 14      S 15      S 16      S 17      S 18      S 19      S 20
0.2589208 0.2331237 0.1888297 0.1803792 0.1801111 0.3977269 0.2499333 0.1663430 0.3915440 0.4214934
     S 21      S 22      S 23      S 24      S 25
0.3213980 0.4166533 0.2655874 0.2696974 0.1646107
```

03)

```
#Question03
#calculate the mean and standard deviation of the 25 sample means
samplemean<-mean(s.means)
samplemean
samplesd<-sd(s.means)
samplesd

#state therelationship of them with true mean and true standard deviation
popmn
samplemean

truesd=popsd/sqrt(6)
samplesd
```

```
> #Question03
> #calculate the mean and standard deviation of the 25 sample means
> samplemean<-mean(s.means)
> samplemean
[1] 2.451667
> samplesd<-sd(s.means)
> samplesd
[1] 0.1223317
> #state therelationship of them with true mean and true standard deviation
> popmn
[1] 2.468
> samplemean
[1] 2.451667
> truesd=popsd/sqrt(6)
> samplesd
[1] 0.1223317
```