



# Faculty of Computing

Year 2 Semester 1 (2025)

IT2120 - Probability and Statistics

Lab Sheet 08

IT24103549

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Q1

```
Untitled1* x
Source on Save
1 #Exercise
2 #Q1
3 setwd("D:\\SLIIT\\2ND YEAR\\2ND YR 1ST SEM\\IT2120 - Probability and Statistics\\labs\\lab 8")
4 data<-read.table("Exercise - LaptopsWeights.txt",header=TRUE)
5 fix(data)
6 attach(data)
7 popmn<-mean(weight.kg.)
8 popmn
9 popsd<-sd(weight.kg.)
10 popsd

7:1 (Top Level)

Console Terminal Background Jobs
R 4.5.1 · D:/SLIIT/2ND YEAR/2ND YR 1ST SEM/IT2120 - Probability and Statistics/labs/lab 8/
> setwd("D:\\SLIIT\\2ND YEAR\\2ND YR 1ST SEM\\IT2120 - Probability and Statistics\\labs\\lab 8")
> data<-read.table("Exercise - LaptopsWeights.txt",header=TRUE)
> fix(data)
> attach(data)

The following object is masked from data (pos = 3):

  weight.kg.

The following object is masked from data (pos = 4):

  weight.kg.

> popmn<-mean(weight.kg.)
> popmn
[1] 2.468
> popsd<-sd(weight.kg.)
> popsd
[1] 0.2561069
> |
```

Q2

```
15
16 #Q2
17
18 samples<-c()
19 n<-c()
20
21 for(i in 1:25){
22   s<-sample(weight.kg.,6,replace = TRUE)
23   samples<-cbind(samples,s)
24   n<-c(n,paste('S',i))
25 }
26
27 colnames(samples)=n
28
29 s.means<-apply(samples,2,mean)
30 s.means|
31
32 s.sd<-apply(samples,2,sd)
33 s.sd
```

30:8 (Top Level) ⚡

```
>
> 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      S 12      S 13      S 14      S 15
2.481667 2.346667 2.461667 2.543333 2.306667 2.518333 2.536667 2.288333 2.395000 2.476667 2.481667 2.591667 2.221667 2.373333 2.595000
      S 16      S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24      S 25
2.298333 2.401667 2.480000 2.440000 2.560000 2.460000 2.261667 2.551667 2.498333 2.681667
>
> 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      S 11      S 12
0.18904144 0.26005128 0.13136463 0.25500327 0.40371607 0.22328606 0.19075289 0.18627041 0.28745434 0.28932104 0.23241486 0.25553212
      S 13      S 14      S 15      S 16      S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24
0.20855854 0.40702170 0.19491024 0.36858739 0.42513135 0.39572718 0.02966479 0.19214578 0.12425780 0.17127950 0.26156580 0.21264211
      S 25
0.13876839
> |
```

### Q3

```
35 #Q3
36 #calculate the mean and standard deviation of the 25 sample means
37 samplemean<-mean(s.means)
38 samplemean
39 samplesd<-sd(s.sd)
40 samplesd
41
42 #state therelationship of them with true mean and true standard deviation
43 popmn
44 samplemean
45
46 truesd=popsd/5
47 samplesd
48
49 (Top Level) ↕
```

Console Terminal Background Jobs

```
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> #Q3
> #calculate the mean and standard deviation of the 25 sample means
> samplemean<-mean(s.means)
> samplemean
[1] 2.450067
> samplesd<-sd(s.sd)
> samplesd
[1] 0.09883573
>
> #state therelationship of them with true mean and true standard deviation
> popmn
[1] 2.468
> samplemean
[1] 2.450067
>
> truesd=popsd/5
> samplesd
[1] 0.09883573
> |
```