Sri Lanka Institute of Information Technology

Lab Submission
<Lab sheet No 8>

IT24102372

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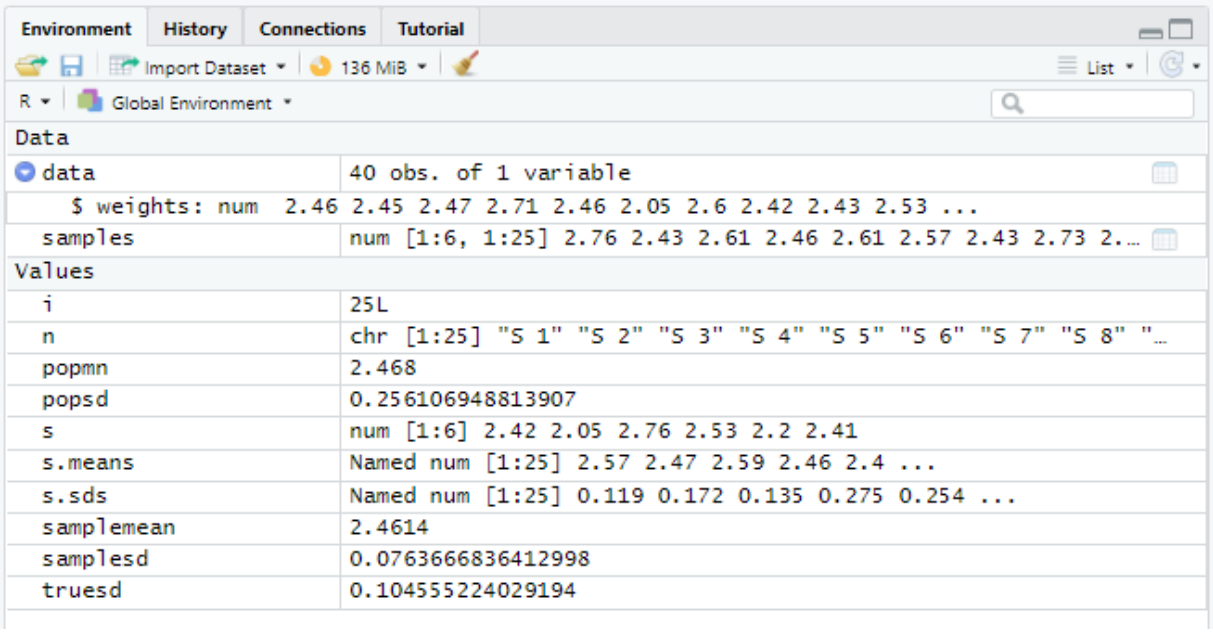
Probability and Statistics| IT2120

B.Sc. (Hons) in Information Technology

```r
setwd("C:\\Users\\Hp\\Desktop\\SLIIT\\Y2 SEM 1\\PS\\LABs\\IT24102372_lab08")
getwd()

data <- read.table('Exercise - Laptopsweights.txt', header = TRUE)
names(data) <- c("weights")
attach(data)

# Q1:
popmn <- mean(weights)
popsd <- sd(weights)

# Q2:
samples <- c()
n <- c()

for (i in 1:25) {
  s <- sample(weights, 6, replace = TRUE)
  samples <- cbind(samples, s)
  n <- c(n, paste('S', i))
}

colnames(samples) <- n

s.means <- apply(samples, 2, mean)
s.sds   <- apply(samples, 2, sd)

#  Q3:
samplemean <- mean(s.means)
samplesd   <- sd(s.means)

truesd <- popsd / sqrt(6)

# --- Print results ---
popmn
popsd

s.means
s.sds
```

```
> popmn
[1] 2.468
> popsd
[1] 0.2561069
>
> s.means
     S 1      S 2      S 3      S 4      S 5      S 6      S 7      S 8      S 9
2.573333 2.473333 2.591667 2.456667 2.401667 2.590000 2.466667 2.401667 2.335000
    S 10     S 11     S 12     S 13     S 14     S 15     S 16     S 17     S 18
2.586667 2.378333 2.381667 2.465000 2.485000 2.451667 2.385000 2.338333 2.428333
    S 19     S 20     S 21     S 22     S 23     S 24     S 25
2.551667 2.538333 2.466667 2.470000 2.448333 2.475000 2.395000
> s.sds
      S 1       S 2       S 3       S 4       S 5       S 6       S 7       S 8
0.1191078 0.1718914 0.1345239 0.2749303 0.2544340 0.2167026 0.4530195 0.2230172
      S 9      S 10      S 11      S 12      S 13      S 14      S 15      S 16
0.3237746 0.1706068 0.3235686 0.2993604 0.2314951 0.1745566 0.2762909 0.2042303
     S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24
0.2436733 0.2481465 0.2654367 0.1708118 0.2451666 0.2405826 0.2792430 0.2358601
     S 25
0.2487368
>
> samplemean
[1] 2.4614
> samplesd
[1] 0.07636668
> truesd
[1] 0.1045552
>
```


Environment
History
Connections
Tutorial
Import Dataset
136 MiB
List
R
Global Environment
Data
data
40 obs. of 1 variable
$ weights: num 2.46 2.45 2.47 2.71 2.46 2.05 2.6 2.42 2.43 2.53 ...
samples
num [1:6, 1:25] 2.76 2.43 2.61 2.46 2.61 2.57 2.43 2.73 2.…
Values
i
25L
n
chr [1:25] "S 1" "S 2" "S 3" "S 4" "S 5" "S 6" "S 7" "S 8" "…
popmn
2.468
popsd
0.256106948813907
s
num [1:6] 2.42 2.05 2.76 2.53 2.2 2.41
s.means
Named num [1:25] 2.57 2.47 2.59 2.46 2.4 ...
s.sds
Named num [1:25] 0.119 0.172 0.135 0.275 0.254 ...
samplemean
2.4614
samplesd
0.0763666836412998
truesd
0.104555224029194