IT24103913

Mahindarathne R.M.P.K.T.

Probability and Statistics - IT2120

Lab sheet 08

Console | Terminal | Background Jobs

R 4.2.2 · C:/Users/it24103913/Desktop/Lab 8/

```
> getwd()
[1] "C:/Users/it24103913/Desktop/Lab 8"
> setwd("C:\\Users\\it24103913\\Desktop\\Lab 8")
> data <- read.table("Exercise - LaptopsWeights.txt", header=TRUE)
> colnames(data) <- c("Weight")
> pop_mean <- mean(data$Weight)
> pop_sd   <- sd(data$Weight)
> pop_mean
[1] 2.468
> pop_sd
[1] 0.2561069
> samples <- c()
> n <- c()
> for(i in 1:25){
+   S <- sample(data$Weight, 6, replace=TRUE)
+   samples <- cbind(samples, S)
+   n <- c(n, paste('Sample', i))
+ }
> colnames(samples) <- n
> s.means <- apply(samples, 2, mean)
> s.sds   <- apply(samples, 2, sd)
> results <- data.frame(
+   Sample = 1:25,
+   Mean = s.means,
+   SD = s.sds
+ )
> results
```

```
          Sample     Mean        SD
Sample 1       1 2.633333 0.1025020
Sample 2       2 2.455000 0.4390786
Sample 3       3 2.455000 0.1415274
Sample 4       4 2.246667 0.3557902
Sample 5       5 2.368333 0.2229275
Sample 6       6 2.535000 0.2675631
Sample 7       7 2.408333 0.3853527
Sample 8       8 2.450000 0.2724702
Sample 9       9 2.446667 0.3947995
Sample 10     10 2.425000 0.2719375
Sample 11     11 2.413333 0.2618142
Sample 12     12 2.546667 0.2480860
Sample 13     13 2.541667 0.2090375
Sample 14     14 2.540000 0.2532193
Sample 15     15 2.556667 0.2465495
Sample 16     16 2.536667 0.1093008
Sample 17     17 2.423333 0.2396386
Sample 18     18 2.296667 0.2353437
Sample 19     19 2.318333 0.2301666
Sample 20     20 2.520000 0.2704071
Sample 21     21 2.525000 0.1628189
Sample 22     22 2.216667 0.1560342
Sample 23     23 2.425000 0.4505441
Sample 24     24 2.528333 0.2010390
Sample 25     25 2.558333 0.1734839
> mean_of_sample_means <- mean(s.means)
> sd_of_sample_means   <- sd(s.means)
> mean_of_sample_means
[1] 2.4548

> sd_of_sample_means
[1] 0.1044433
> theoretical_sd <- pop_sd / sqrt(6)
> theoretical_sd
[1] 0.1045552
>
```