IT24100878

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Exercise

Console Terminal Background Jobs

R 4.5.1 · C:/Users/DELL/Desktop/IT24100878/

```
> setwd("C:\\Users\\DELL\\Desktop\\IT24100878")
> data<-read.table("Exercise - LaptopsWeights.txt",header = TRUE)
> fix(data)
> attach(data)
The following object is masked from data (pos = 3):

    weight.kg.

> sd(weight.kg.)
[1] 0.2561069
> setwd("C:\\Users\\DELL\\Desktop\\IT24100878")
> 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.
```

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```
> #Q1
> popmn <- mean(weight.kg.)
> popmn
[1] 2.468
> popvar<-var(weight.kg.)
> popvar
[1] 0.06559077
> sd(weight.kg.)
[1] 0.2561069
```

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```
> #Q2
> samples <- c()
> n <- c()
> 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
2.438333 2.606667 2.341667 2.406667 2.253333 2.476667 2.550000 2.546667 2.603333
    S 10     S 11     S 12     S 13     S 14     S 15     S 16     S 17     S 18
2.375000 2.530000 2.496667 2.285000 2.498333 2.485000 2.443333 2.520000 2.521667
    S 19     S 20     S 21     S 22     S 23     S 24     S 25
2.368333 2.545000 2.618333 2.591667 2.488333 2.541667 2.508333
> s.vars <-apply(samples,2,var)
> s.sds   <- sqrt(s.vars)
> s.sds
      S 1       S 2       S 3       S 4       S 5       S 6       S 7       S 8
0.2091331 0.1640325 0.2520648 0.1990645 0.2831725 0.1933563 0.2030763 0.1695484
      S 9      S 10      S 11      S 12      S 13      S 14      S 15      S 16
0.1631768 0.2758804 0.2440492 0.1832667 0.3612063 0.1040032 0.0680441 0.3171540
     S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24
0.4206186 0.1419037 0.2884037 0.1295762 0.2422739 0.1885117 0.1909363 0.2823768
     S 25
0.2424390
> samplemean <- mean(s.means)
> samplevars <- var(s.vars)
> popmn
[1] 2.468
```

```
[1] 2.4816
> truevar = popvar/5
> samplevars
[1] 0.001530709
> #Q3
> # mean of sample means
> samplemean <- mean(s.means)
> samplemean
[1] 2.4816
> # std dev of sample means
> sample.sd   <- sd(s.means)
> sample.sd
[1] 0.09747208
> # theoretical variance of sample mean
> truevar <- popvar/6
> truevar
[1] 0.01093179
> # theoretical std dev
> true.sd <- sqrt(truevar)
> true.sd
[1] 0.1045552
>
```