Probability and Statistics - IT2120

IT24103507

```r
setwd("C:\\Users\\USER\\Downloads\\IT24103507")

data <- read.table("Exercise - LaptopsWeights.txt", header = TRUE)
fix(data)
attach(data)

#question 01
popmean <- mean(weight.kg.)
popmean

popstd <-sd(weight.kg.)
popstd

```

```
> setwd("C:\\Users\\USER\\Downloads\\IT24103507")
> data <- read.table("Exercise - LaptopsWeights.txt", header = TRUE)
> fix(data)
> attach(data)
The following object is masked from data (pos = 3):

    weight.kg.

> popmean <- mean(weight.kg.)
> popmean
[1] 2.468
> popstd <-sd(weight.kg.)
> popstd
[1] 0.2561069
```

```r
#question 02
Samples <- c()
n <- c()

for(i in 1:25) {
  s <- sample(weight.kg., 6, replace= TRUE) #here, sample is a function.
  Samples <- cbind(Samples, s) #here, Samples is the name we gave the variable.
  n <- c(n, paste('S', i))
}
Samples
n
colnames(Samples)=n

samplemean <- apply(Samples, 2, mean)
samplemean

samplestd <- apply(Samples, 2, sd)
samplestd
```

```
> Samples <- c()
> n <- c()
> for(i in 1:25) {
+   s <- sample(Weight.kg., 6, replace= TRUE) #here, sample is a function.
+   Samples <- cbind(Samples, s) #here, Samples is the name we gave the variable.
+   n <- c(n, paste('S', i))
+ }
> Samples
       s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s    s
[1,] 2.41 2.70 2.66 2.53 2.73 2.61 2.71 2.32 2.05 2.45 2.60 2.67 2.20 2.75 2.67 2.57 2.66 2.67 2.73 2.76 2.70 2.20 2.47 2.46 2.85
[2,] 2.43 2.42 2.70 2.73 2.57 2.51 2.17 2.32 2.76 2.47 2.46 2.53 2.53 2.45 2.43 2.75 2.28 2.13 2.17 2.75 2.57 2.85 2.53 2.20 2.60
[3,] 2.70 2.28 2.47 2.20 1.71 2.71 2.85 2.67 2.46 2.71 2.85 2.60 2.53 2.67 2.41 1.71 1.71 2.85 2.13 2.70 1.71 2.17 2.70 1.71 2.20
[4,] 2.43 2.57 2.06 1.71 2.45 2.46 2.05 2.47 2.85 2.71 2.53 2.20 2.47 2.17 2.70 2.45 2.05 2.70 2.75 2.70 2.42 2.17 2.61 2.46 2.57
[5,] 2.43 2.05 2.57 2.65 2.05 2.70 2.13 2.57 2.73 2.60 2.45 2.41 2.28 2.85 2.43 2.46 2.73 2.41 2.70 2.43 2.46 2.85 2.85 2.17 2.65
[6,] 2.47 2.06 2.67 2.76 2.57 2.42 2.47 2.89 2.43 2.76 2.76 2.47 2.53 2.20 2.51 2.46 2.47 2.13 2.73 2.76 2.57 2.41 2.57 2.13 2.46
```

```
> n
 [1] "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" "S 16" "S 17" "S 18" "S 19"
[20] "S 20" "S 21" "S 22" "S 23" "S 24" "S 25"
> colnames(Samples)=n
> samplemean <- apply(Samples, 2, mean)
> samplemean
     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
2.478333 2.346667 2.521667 2.430000 2.346667 2.568333 2.396667 2.540000 2.546667 2.616667 2.608333 2.480000 2.423333 2.515000 2.525000
    S 16     S 17     S 18     S 19     S 20     S 21     S 22     S 23     S 24     S 25
2.400000 2.316667 2.481667 2.535000 2.683333 2.405000 2.441667 2.621667 2.188333 2.555000

> samplestd <- apply(Samples, 2, sd)
> samplestd
      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
0.1103479 0.2663582 0.2412813 0.4070872 0.3874876 0.1235179 0.3321847 0.2200000 0.2962881 0.1323128 0.1641239 0.1651666 0.1461050 0.2877325
     S 15      S 16      S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24      S 25
0.1289574 0.3569874 0.3880034 0.3070125 0.2989147 0.1272268 0.3543304 0.3287806 0.1360025 0.2757837 0.2160324
```

```
33 #question 03
34 meanofsamples <- mean(samplemean)
35 meanofsamples
36
37 stdofsamples <- sd(samplestd)
38 stdofsamples
39
40 #compare true population mean and the one we got practically
41 popmean
42 meanofsamples
43
44 #compare true std with the one we got practically
45 popstd
46 stdofsamples
47
```

```
> meanofsamples <- mean(samplemean)
> meanofsamples
[1] 2.478867
> stdofsamples <- sd(samplestd)
> stdofsamples
[1] 0.09736441
> #compare true population mean and the one we got practically
> popmean
[1] 2.468
> meanofsamples
[1] 2.478867
> #compare true std with the one we got practically
> popstd
[1] 0.2561069
> stdofsamples
[1] 0.09736441
```