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IT24102669

1.Calculate the population mean and population standard deviation of the laptop bag weights.

```r
setwd("C:\\Users\\ASUS\\Desktop\\IT24102669")

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

#1)
popmn<-mean(Weight.kg.)
popmn

popsd<-sd(Weight.kg.)
popsd

#2)
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))
}
```

```r

colnames(samples)=n

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


samplemean<-mean(s.means)
samplemean

samplesd<-sd(s.sds)
samplesd

#3)
popmn
samplemean

truemean = popmn
truemean
```

```
45  popsd
46  samplesd
47
48  truesd = popsd / sqrt(6)
49  truesd
50
51  samplesd
52
53
```

```
> setwd("C:\\Users\\ASUS\\Desktop\\IT24102669")
> data<-read.table("Exercise - LaptopsWeights.txt",header=TRUE)
> fix(data)
> attach(data)
> #1)
> popmn<-mean(Weight.kg.)
> popmn
[1] 2.468
> popsd<-sd(Weight.kg.)
> popsd
[1] 0.2561069
> #2)
> samples<-c()
> n<-c()
> for(i in 1:25){
+   s<-sample(Weight.kg.,6,replace=TRUE)
```

2. Draw 25 random samples of size 6 (with replacement) and calculate

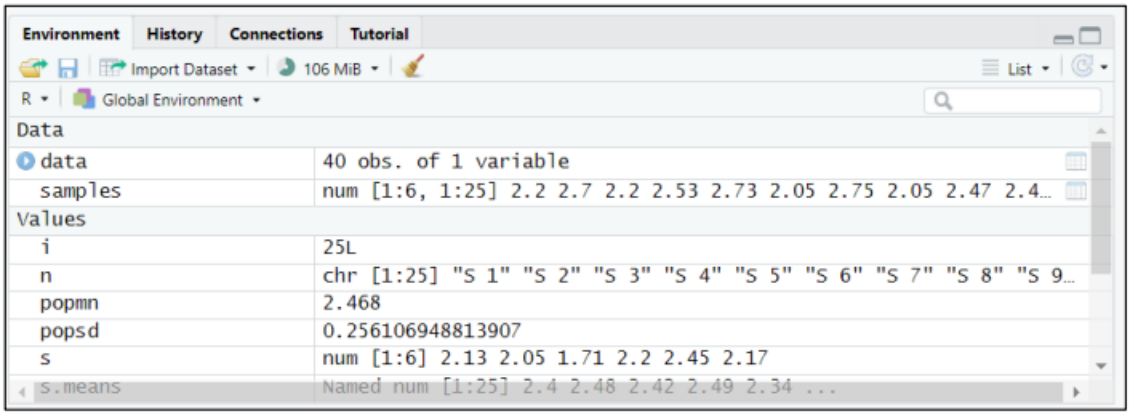
```
+   samples<-cbind(samples,s)
+   n<-c(n,paste('S',i))
+ }
> colnames(samples)=n
> s.means<-apply(samples,2,mean)
> s.means
     S 1      S 2      S 3      S 4      S 5      S 6      S 7      S 8      S 9
2.400000 2.418333 2.535000 2.395000 2.430000 2.520000 2.571667 2.393333 2.505000
    S 10     S 11     S 12     S 13     S 14     S 15     S 16     S 17     S 18
2.460000 2.488333 2.571667 2.353333 2.445000 2.521667 2.506667 2.496667 2.486667
    S 19     S 20     S 21     S 22     S 23     S 24     S 25
2.558333 2.400000 2.586667 2.456667 2.580000 2.570000 2.690000
> s.sds<-apply(samples,2,sd)
> s.sds
       S 1        S 2        S 3        S 4        S 5        S 6        S 7
0.19819183 0.29518920 0.15833509 0.32794817 0.11610340 0.22794736 0.20242694
```

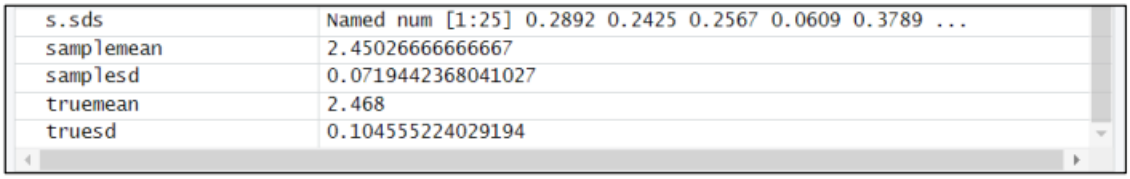
```
       S 8        S 9       S 10       S 11       S 12       S 13       S 14
0.30203753 0.41654532 0.26099808 0.21655638 0.22310685 0.35291170 0.25516661
      S 15       S 16       S 17       S 18       S 19       S 20       S 21
0.17736027 0.24792472 0.19976653 0.07941452 0.20999206 0.24132965 0.18206226
      S 22       S 23       S 24       S 25
0.25897233 0.10469002 0.27662249 0.14240786
> samplemean<-mean(s.means)
> samplemean
[1] 2.4936
> samplesd<-sd(s.sds)
> samplesd
[1] 0.07807912
> popmn
[1] 2.468
> samplemean
[1] 2.4936
```

3. Calculate the mean and standard deviation of the 25 sample means and state the relationship of them with true mean and true standard deviation

```
> #3)
> popmn
[1] 2.468
> samplemean
[1] 2.4936
> truemean = popmn
> truemean
[1] 2.468
> popsd
[1] 0.2561069
> samplesd
[1] 0.07807912
> truesd = popsd / sqrt(6)
> truesd
[1] 0.1045552
> samplesd
```

```
> samplesd
[1] 0.07807912
>
```


Environment
History
Connections
Tutorial
Import Dataset
106 MiB
List
R
Global Environment
Data
data
40 obs. of 1 variable
samples
num [1:6, 1:25] 2.2 2.7 2.2 2.53 2.73 2.05 2.75 2.05 2.47 2.4...
Values
i
25L
n
chr [1:25] "S 1" "S 2" "S 3" "S 4" "S 5" "S 6" "S 7" "S 8" "S 9...
popmn
2.468
popsd
0.256106948813907
s
num [1:6] 2.13 2.05 1.71 2.2 2.45 2.17
s.means
Named num [1:25] 2.4 2.48 2.42 2.49 2.34 ...


s.sds
Named num [1:25] 0.2892 0.2425 0.2567 0.0609 0.3789 ...
samplemean
2.45026666666667
samplesd
0.0719442368041027
truemean
2.468
truesd
0.104555224029194