IT24103927

Hettiarachchi H.S.A

Probability and Statistics - IT2120

Lab Sheet 8

Exercise

01)

```
setwd("C:\\Users\\IT24103927\\Desktop\\IT24103927")
data<-read.table("Exercise - LaptopsWeights.txt", header = TRUE)
weights <- data$Weight.kg.

#1
pop_mean<-mean(weights)
pop_sd<-sd(weights)
pop_mean
pop_sd
```

```
> #1
> pop_mean<-mean(weights)
> pop_sd<-sd(weights)
> pop_mean
[1] 2.468
> pop_sd
[1] 0.2561069
```

02)

```r
#2
num_samples<-25
sample_size<-6

sample_means<-numeric(num_samples)
sample_sds<-numeric(num_samples)

set.seed(123)

for( i in 1:num_samples){
  samp<-sample(weights, size = sample_size, replace =TRUE)
  sample_means[i]<-mean(samp)
  sample_sds[i]<-sd(samp)
}

results<-data.frame(
  Sample=1:num_samples,
  Mean = round(sample_means,3),
  SD = round(sample_sds,3)

)
print(results)
```

```
> #2
> num_samples<-25
> sample_size<-6
>
> sample_means<-numeric(num_samples)
> sample_sds<-numeric(num_samples)
>
> set.seed(123)
>
> for( i in 1:num_samples){
+   samp<-sample(weights, size = sample_size, replace =TRUE)
+   sample_means[i]<-mean(samp)
+   sample_sds[i]<-sd(samp)
+ }
>
> results<-data.frame(
+   Sample=1:num_samples,
+   Mean = round(sample_means,3),
+   SD = round(sample_sds,3)
+
+ )
> print(results)
```

```
   Sample  Mean    SD
1       1 2.530 0.151
2       2 2.573 0.119
3       3 2.473 0.172
4       4 2.592 0.135
5       5 2.457 0.275
6       6 2.402 0.254
7       7 2.590 0.217
8       8 2.467 0.453
9       9 2.402 0.223
10     10 2.335 0.324
11     11 2.587 0.171
12     12 2.378 0.324
13     13 2.382 0.299
14     14 2.465 0.231
15     15 2.485 0.175
16     16 2.452 0.276
17     17 2.385 0.204
18     18 2.338 0.244
19     19 2.428 0.248
20     20 2.552 0.265
21     21 2.538 0.171
22     22 2.467 0.245
23     23 2.470 0.241
24     24 2.448 0.279
25     25 2.475 0.236
```

03)

```
32  #3
33  mean_of_means <- mean(sample_means)
34  sd_of_means<-sd(sample_means)
35  mean_of_means
36  sd_of_means
```

```
> #3
> mean_of_means <- mean(sample_means)
> sd_of_means<-sd(sample_means)
> mean_of_means
[1] 2.4668
> sd_of_means
[1] 0.07624874
```