IT24100886

IT2120 - Probability and Statistics
LabSheet 08

Script

IT24100886_R_Script.R

```r
setwd('C:\\Users\\hasit\\OneDrive\\Documents\\SLIIT\\Work\\Y2S1\\IT2120 - Probability and Statistics\\Lab08\\IT2410088
getwd()

weights <- read.table("ExerciseLaptopsWeights.txt", header=TRUE)
attach(weights)

# Part 1

population_mean <- mean(weights$Weight)
population_sd <- sd(weights$Weight)

print(population_mean)
print(population_sd)


#Part 2
sample_means <- numeric(25)
sample_sds <- numeric(25)

for(i in 1:25) {
  sample <- sample(weights$Weight, size = 6, replace = TRUE)
  sample_means[i] <- mean(sample)
  sample_sds[i] <- sd(sample)
}

print(sample_means)
print(sample_sds)


# Part 3
mean_of_sample_means <- mean(sample_means)
sd_of_sample_means <- sd(sample_means)

print(mean_of_sample_means)
print(sd_of_sample_means)

print(population_mean)
print(population_sd)
```

Console

```
Console  Terminal  Background Jobs
R 4.5.1 · ~/SLIIT/Work/Y2S1/IT2120 - Probability and Statistics/Lab08/IT24100886/
> population_mean <- mean(weights$Weight)
> population_sd <- sd(weights$Weight)
>
> print(population_mean)
[1] 2.468
> print(population_sd)
[1] 0.2561069
>
>
> #Part 2
> sample_means <- numeric(25)
> sample_sds <- numeric(25)
>
> for(i in 1:25) {
+   sample <- sample(weights$Weight, size = 6, replace = TRUE)
+   sample_means[i] <- mean(sample)
+   sample_sds[i] <- sd(sample)
+ }
>
> print(sample_means)
 [1] 2.465000 2.676667 2.538333 2.376667 2.321667 2.516667 2.368333 2.483333 2.400000 2.308333 2.505000 2.151667
[13] 2.663333 2.560000 2.498333 2.565000 2.525000 2.528333 2.608333 2.438333 2.425000 2.528333 2.430000 2.575000
[25] 2.451667
> print(sample_sds)
 [1] 0.2394786 0.2869611 0.2792430 0.3491514 0.2076937 0.4202698 0.3371894 0.2654556 0.3842916 0.2096108 0.2338162
[12] 0.2899943 0.1527962 0.2860769 0.2173860 0.2125794 0.1645296 0.2493525 0.1838931 0.2801726 0.2393951 0.2643041
[23] 0.1266491 0.1242176 0.2124539
>
>
> # Part 3
> mean_of_sample_means <- mean(sample_means)
> sd_of_sample_means <- sd(sample_means)
>
> print(mean_of_sample_means)
[1] 2.476333
> print(sd_of_sample_means)
[1] 0.1161297
>
> print(population_mean)
[1] 2.468
> print(population_sd)
[1] 0.2561069
>
```