Sri Lanka Institute of Information Technology

Lab Submission

Lab sheet No: 08

IT24102348

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Probability and Statistics | IT2120

B.Sc. (Hons) in Information Technology

Exercise

1)

```
setwd("C:\\Users\\ASUS\\OneDrive - Sri Lanka Institute of Information Technology\\Academic\\3rd Semester\\I

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

weights <- Weight.kg.

head(weights)

#---Q1---

pop_mean <- mean(weights)
pop_sd <- sd(weights)

cat("Population mean =", pop_mean,"\n")
cat("Population standard deviation =", pop_sd)
```

```
> #---Q1---
>
> pop_mean <- mean(weights)
> pop_sd <- sd(weights)
>
> cat("Population mean =", pop_mean,"\n")
Population mean = 2.468
> cat("Population standard deviation =", pop_sd)
Population standard deviation = 0.2561069>
```

2)

```
#---Q2---

sample_means <- c()
sample_sds   <- c()

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

sample_means
sample_sds
```

```
> #---Q2---
>
> sample_means <- c()
> sample_sds   <- c()
>
> for (i in 1:25) {
+   samp <- sample(weights, size=6, replace=TRUE)
+   sample_means[i] <- mean(samp)
+   sample_sds[i]   <- sd(samp)
+ }
>
> sample_means
 [1] 2.233333 2.675000 2.373333 2.563333 2.448333 2.538333 2.363333 2.535000 2.391667 2.450000 2.626667
[12] 2.246667 2.333333 2.585000 2.296667 2.563333 2.431667 2.400000 2.503333 2.650000 2.460000 2.450000
[23] 2.500000 2.483333 2.368333
> sample_sds
 [1] 0.3264149 0.1032957 0.2294050 0.2603587 0.1456594 0.1285950 0.1718914 0.3091763 0.4290183 0.2176235
[11] 0.1921111 0.3036226 0.2552385 0.1531992 0.3786115 0.2349184 0.1788202 0.2051341 0.2653049 0.1150652
[21] 0.3997499 0.1492649 0.1983935 0.2556299 0.2407834
```

3)

```
#---Q3---

mean_of_sample_means <- mean(sample_means)
sd_of_sample_means   <- sd(sample_means)

cat("Mean of sample means =", mean_of_sample_means,"\n")
cat("SD of sample means =", sd_of_sample_means)
```

```
> #---Q3---
>
> mean_of_sample_means <- mean(sample_means)
> sd_of_sample_means   <- sd(sample_means)
>
> cat("Mean of sample means =", mean_of_sample_means,"\n")
Mean of sample means = 2.4588
> cat("SD of sample means =", sd_of_sample_means)
SD of sample means = 0.1185166
```