Exercise

```r
setwd("C:\\Users\\ASUS\\Desktop\\IT24103580")

# Import the dataset
weights <- read.table("Exercise - LaptopsWeights.txt", header=TRUE)
attach(weights)

#Q1
#  Population mean & standard deviation
weights <- c(2.3, 2.7, 3.1, 2.9, 3.4, 2.5, 3.0, 2.8, 3.2, 2.6)
pop_mean <- mean(weights)
pop_sd   <- sd(weights)

cat("Population Mean =", pop_mean, "\n")
cat("Population SD   =", pop_sd, "\n")

#Q3
#Take 25 samples of size 6 (with replacement)
set.seed(123)
sample_means <- c()
sample_sds   <- c()

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

print(data.frame(Sample=1:25, SampleMean=sample_means, SampleSD=sample_sds))

#Q3
#Mean & SD of sample means
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, "\n")
```

```r
> setwd("C:\\Users\\ASUS\\Desktop\\IT24103580")
> weights <- read.table("Exercise - LaptopsWeights.txt", header=TRUE)
> attach(weights)

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> weights <- c(2.3, 2.7, 3.1, 2.9, 3.4, 2.5, 3.0, 2.8, 3.2, 2.6)
> pop_mean <- mean(weights)
> pop_sd   <- sd(weights)
>
> cat("Population Mean =", pop_mean, "\n")
Population Mean = 2.85
> cat("Population SD   =", pop_sd, "\n")
Population SD   = 0.3374743
```

```
> set.seed(123)
> sample_means <- c()
> sample_sds   <- c()
>
> for(i in 1:25){
+   sample_data <- sample(weights, size = 6, replace = TRUE)
+   sample_means[i] <- mean(sample_data)
+   sample_sds[i]   <- sd(sample_data)
+ }
>
> print(data.frame(Sample=1:25, SampleMean=sample_means, SampleSD=sample_sds))
   Sample SampleMean  SampleSD
1       1   2.900000 0.3521363
2       2   2.950000 0.3507136
3       3   3.016667 0.2562551
4       4   2.850000 0.3391165
5       5   3.066667 0.2732520
6       6   2.983333 0.3816630
7       7   2.850000 0.3937004
8       8   3.016667 0.3710346
9       9   2.700000 0.2280351
10     10   2.566667 0.2422120
11     11   2.933333 0.3723797
12     12   3.083333 0.1602082
13     13   2.883333 0.2639444
14     14   3.000000 0.3521363
15     15   2.600000 0.2000000
16     16   2.766667 0.3204164
17     17   2.850000 0.2345208
18     18   2.950000 0.3885872
19     19   2.883333 0.2786874
20     20   2.950000 0.1870829
21     21   2.850000 0.3016621
22     22   2.833333 0.1966384
23     23   2.733333 0.3265986
24     24   2.933333 0.3326660
25     25   2.833333 0.3723797
```

```
> 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 = 2.879333
> cat("SD of Sample Means   =", sd_of_sample_means, "\n")
SD of Sample Means   = 0.1308165
```