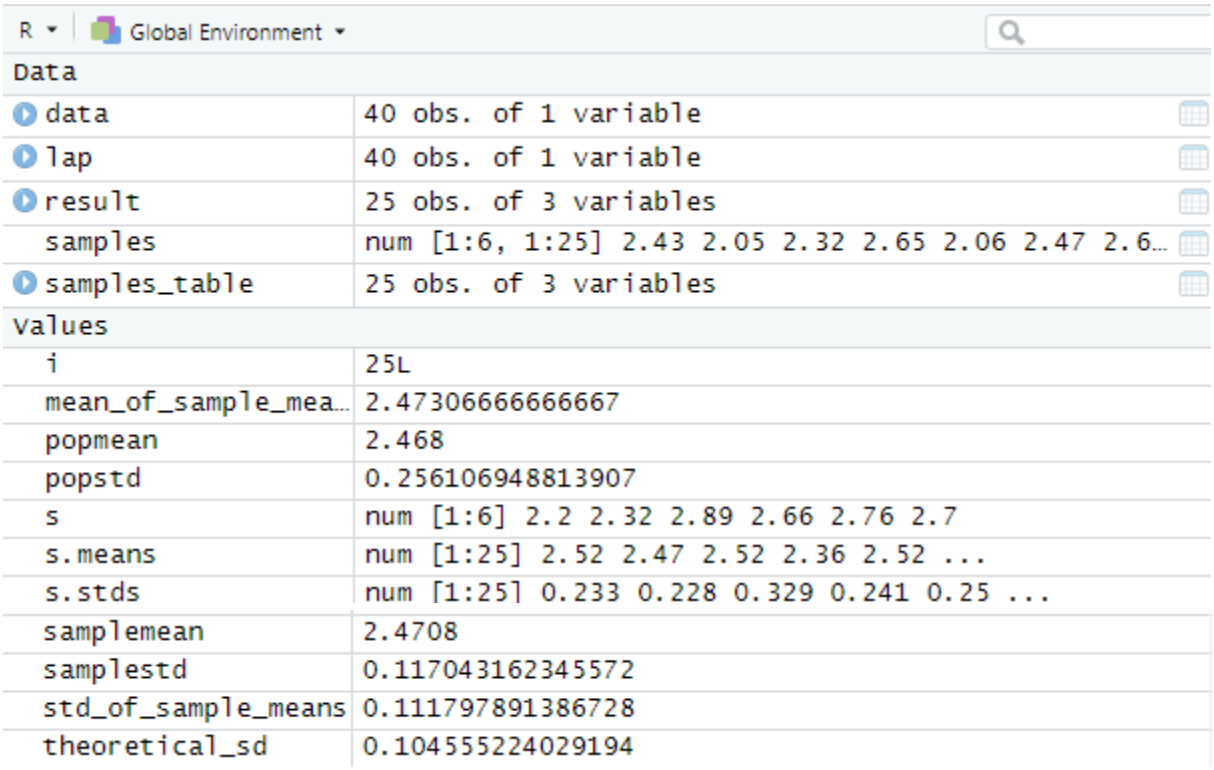
```r
setwd("//Users//IT24100494//Desktop//ps lab 8 ")

## Importing the data set
lap <- read.table("//Users//IT24100494//Downloads/Exercise - LaptopsWeights.txt", header=TRUE)
fix(lap)
attach(lap)

## ============================
## Question 01
## Population mean and population standard deviation
popmean <- mean(Weight.kg.)
popstd  <- sd(Weight.kg.)

popmean
popstd

## ============================
## Question 02
## Get 25 random samples of size 6, with replacement
s.means <- c()
s.stds  <- c()

for(i in 1:25){
  s <- sample(Weight.kg., 6, replace=TRUE)
  s.means[i] <- mean(s)
  s.stds[i]  <- sd(s)
}

## Create a table of results
samples_table <- data.frame(
  Sample = 1:25,
  Mean   = s.means,
  StdDev = s.stds
)
samples_table

## ============================
## Question 03
## Mean and standard deviation of the Sample Means
samplemean  <- mean(s.means)
samplestd   <- sd(s.means)

samplemean
samplestd

## Compare with population mean and theoretical SD
popmean
popstd/sqrt(6)
```

```
> popstd  <- sd(weight.kg.)
> popmean
[1] 2.468
> popstd
[1] 0.2561069
> ## ============================
> ## Question 02
> ## Get 25 random samples of size 6, with replacement
> s.means <- c()
> s.stds  <- c()
> for(i in 1:25){
+   s <- sample(weight.kg., 6, replace=TRUE)
+   s.means[i] <- mean(s)
+   s.stds[i]  <- sd(s)
+ }
> ## Create a table of results
> samples_table <- data.frame(
+   Sample = 1:25,
+   Mean   = s.means,
+   StdDev = s.stds
+ )
> samples_table
   Sample     Mean    StdDev
1       1 2.518333 0.2325869
2       2 2.473333 0.2280935
3       3 2.523333 0.3294642
4       4 2.361667 0.2406173
5       5 2.523333 0.2504130
6       6 2.411667 0.4273367
7       7 2.500000 0.1801111
8       8 2.366667 0.3743083
9       9 2.408333 0.2054669
10     10 2.560000 0.2513165
11     11 2.530000 0.1933908
12     12 2.523333 0.1709581
13     13 2.520000 0.1886796
14     14 2.706667 0.1194432
15     15 2.480000 0.1662528
16     16 2.465000 0.2674883
17     17 2.358333 0.3715059
18     18 2.595000 0.2267818
19     19 2.466667 0.1480090
20     20 2.335000 0.2074367
```

```
21      21 2.495000 0.2583602
22      22 2.506667 0.3230273
23      23 2.476667 0.3025007
24      24 2.076667 0.3392737
25      25 2.588333 0.2686572
> ## ============================
> ## Question 03
> ## Mean and standard deviation of the Sample Means
> samplemean  <- mean(s.means)
> samplestd   <- sd(s.means)
> samplemean
[1] 2.4708
> samplestd
[1] 0.1170432
> ## Compare with population mean and theoretical SD
> popmean
[1] 2.468
> popstd/sqrt(6)
[1] 0.1045552
```



R ▾ | Global Environment ▾

Data	
data	40 obs. of 1 variable
lap	40 obs. of 1 variable
result	25 obs. of 3 variables
samples	num [1:6, 1:25] 2.43 2.05 2.32 2.65 2.06 2.47 2.6…
samples_table	25 obs. of 3 variables
Values	
i	25L
mean_of_sample_mea…	2.47306666666667
popmean	2.468
popstd	0.256106948813907
s	num [1:6] 2.2 2.32 2.89 2.66 2.76 2.7
s.means	num [1:25] 2.52 2.47 2.52 2.36 2.52 ...
s.stds	num [1:25] 0.233 0.228 0.329 0.241 0.25 ...
samplemean	2.4708
samplestd	0.117043162345572
std_of_sample_means	0.111797891386728
theoretical_sd	0.104555224029194