IT24003295

PS lab 08

```r
setwd("C:\\Users\\thisu\\OneDrive\\Desktop\\IT24103295")

data <- read.table("Data - Lab 8.txt", header=TRUE)
print(data)
attach(data)

#Q1
popmn <- mean(Nicotine)
popvar <- (var(Nicotine) * (length(Nicotine) - 1)) / length(Nicotine)
cat("Population Mean:", popmn, "\n")
cat("Population Variance:", popvar, "\n")

#Q2
s.means <- c()
s.vars <- c()

# The "for" loop will be used to create and assign samples
for (i in 1:30) {
  s <- sample(Nicotine, 5, replace = TRUE)
  s.means <- c(s.means, mean(s))
  s.vars <- c(s.vars, var(s))
}
print(s.means)
print(s.vars)

#Q3
mean_of_sample_means <- mean(s.means)

variance_of_sample_means <- var(s.means)

cat("Mean of the Sample Means:", mean_of_sample_means, "\n")
cat("Variance of the Sample Means:", variance_of_sample_means, "\n")
```

```
> setwd("C:\\Users\\thisu\\OneDrive\\Desktop\\IT24103295")
>
> data <- read.table("Data - Lab 8.txt", header=TRUE)
> print(data)
   Nicotine
1      1.09
2      1.74
3      1.58
4      2.11
5      1.64
6      1.79
7      1.37
8      1.75
9      1.92
10     1.47
11     2.03
12     1.86
13     0.72
14     2.46
15     1.93
16     1.63
17     2.31
18     1.97
19     1.70
20     1.90
21     1.69
22     1.88
23     1.40
24     2.37
25     1.79
26     0.85
27     2.17
28     1.68
29     1.85
30     2.08
31     1.64
32     1.75
33     2.28
34     1.24
35     2.55

> attach(data)
>
> #Q1
> popmn <- mean(Nicotine)
> popvar <- (var(Nicotine) * (length(Nicotine) - 1)) / length(Nicotine)
> cat("Population Mean:", popmn, "\n")
Population Mean: 1.77425
> cat("Population Variance:", popvar, "\n")
Population Variance: 0.1486444
>
> #Q2
> s.means <- c()
> s.vars <- c()
>
> # The "for" loop will be used to create and assign samples
> for (i in 1:30) {
+    s <- sample(Nicotine, 5, replace = TRUE)
+    s.means <- c(s.means, mean(s))
+    s.vars <- c(s.vars, var(s))
+ }
> print(s.means)
 [1] 1.854 1.722 1.588 1.584 1.474 1.766 1.664 1.754 1.882 1.940 1.544 1.916 1.342 1.718 2.016
[16] 1.598 1.762 2.072 1.698 1.882 1.736 1.822 1.706 1.670 1.806 1.988 1.852 1.854 1.734 1.738
> print(s.vars)
 [1] 0.07503 0.01812 0.00872 0.23098 0.07818 0.04853 0.14418 0.13673 0.04347 0.12460 0.28793
[12] 0.00493 0.43452 0.22177 0.34313 0.22927 0.05927 0.06512 0.34132 0.06787 0.06063 0.00967
[23] 0.05303 0.08910 0.01708 0.12112 0.29952 0.15978 0.09763 0.21772
>
> #Q3
> mean_of_sample_means <- mean(s.means)
>
> variance_of_sample_means <- var(s.means)
>
> cat("Mean of the Sample Means:", mean_of_sample_means, "\n")
Mean of the Sample Means: 1.756067
> cat("Variance of the Sample Means:", variance_of_sample_means, "\n")
Variance of the Sample Means: 0.02593365
```