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[1] "C:/Users/PC/Desktop/IT24100514_PS_LAB_08"
> data <- read.table("Data - Lab 8.txt",header=TRUE)
> fix(data)
> attach(data)
> popmn <- mean(Nicotine)
> popmn
[1] 1.77425
> popvar <- var(Nicotine)
> popvar
[1] 0.1524558
> samples <- c()
> n <- c()

> for(i in 1:30){
+
+   s<- sample(Nicotine,5,replace=TRUE)
+   samples <- cbind(samples,s)
+   n <- c(n,paste('S',i))
+
+
+
+ }

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> samples
      S      S      S      S      S      S      S      S      S      S      S      S      S      S      S      S      S
[1,] 1.64 2.55 1.88 1.64 2.37 2.28 1.47 1.97 1.93 1.69 1.74 1.09 1.24 1.69 1.67 1.88 1.24 2.31
[2,] 1.47 1.24 2.03 1.69 1.63 1.88 1.74 1.97 1.79 2.09 1.93 1.51 1.88 1.75 1.75 1.51 2.46 1.68
[3,] 1.90 1.51 2.37 1.97 1.09 1.88 1.85 2.55 2.37 1.79 1.67 0.72 1.75 1.90 2.37 0.72 1.85 1.79
[4,] 2.17 1.09 1.51 1.51 2.08 1.58 2.09 1.75 2.46 1.97 1.09 1.74 1.69 1.82 2.09 1.70 2.09 2.28
[5,] 1.63 1.75 2.11 2.46 1.09 2.31 1.70 2.17 1.58 1.93 2.31 1.97 1.88 1.69 1.86 1.09 1.64 1.69
      S      S      S      S      S      S      S      S      S      S      S      S
[1,] 1.92 1.70 1.51 2.08 2.08 1.82 1.37 1.64 1.70 1.75 1.69 1.67
[2,] 1.97 1.92 2.17 1.79 1.82 2.03 2.46 1.90 1.97 2.31 2.37 1.09
[3,] 1.68 1.69 1.85 2.11 1.93 1.88 2.55 1.79 1.58 0.72 0.85 1.47
[4,] 1.40 1.47 0.72 1.69 2.37 2.37 1.86 1.85 1.24 1.67 1.68 1.58
[5,] 1.40 2.03 0.72 1.79 1.75 1.90 1.67 1.97 1.69 1.85 1.97 1.24
> n
[1] "S 1" "S 2" "S 3" "S 4" "S 5" "S 6" "S 7" "S 8" "S 9" "S 10" "S 11" "S 12" "S 13"
[14] "S 14" "S 15" "S 16" "S 17" "S 18" "S 19" "S 20" "S 21" "S 22" "S 23" "S 24" "S 25" "S 26"

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> s.means <- apply(samples,2,mean)
> s.vars <- apply(samples,2,var)
> s.means
      S 1      S 2      S 3      S 4      S 5      S 6      S 7      S 8      S 9      S 10      S 11      S 12      S 13      S 14      S 15      S 16
1.762 1.628 1.980 1.854 1.652 1.986 1.770 2.082 2.026 1.894 1.748 1.406 1.688 1.770 1.948 1.380
      S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24      S 25      S 26      S 27      S 28      S 29      S 30
1.856 1.950 1.674 1.762 1.394 1.892 1.990 2.000 1.982 1.830 1.636 1.660 1.712 1.410
> s.vars
      S 1      S 2      S 3      S 4      S 5      S 6      S 7      S 8      S 9      S 10      S 11      S 12
0.07577 0.32972 0.10060 0.14293 0.33272 0.09468 0.05115 0.09052 0.14263 0.02448 0.19702 0.25273
      S 13      S 14      S 15      S 16      S 17      S 18      S 19      S 20      S 21      S 22      S 23      S 24

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> samplemean <- mean(s.means)
> samplevars <- var(s.means)
> samplemean
[1] 1.7774
> samplevars
[1] 0.03966432
> popmn
[1] 1.77425
> samplemean
[1] 1.7774
> truevar=popvar/5
> truevar
[1] 0.03049117
> samplevars
[1] 0.03966432

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EXERCISE

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' ,
> data <- read.table("Exercise - LaptopsWeights.txt",header=TRUE)
> fix(data)
> attach(data)
> weights <- data$weight
> pop_mean <- mean(weights)
> pop_sd <- sd(weights)
> pop_sd_population <- sqrt(sum((data - pop_mean)^2) / length(data))
> cat("Population Mean:", pop_mean, "\n")
Population Mean: 2.468
> cat("Population SD:", pop_sd_population, "\n")
Population SD: 1.599387

> set.seed(123)
> sample_means <- numeric(25)
> sample_sds <- numeric(25)
> for (i in 1:25) {
+   samp <- sample(weights, size = 6, replace = TRUE)
+   sample_means[i] <- mean(samp)
+   sample_sds[i] <- sd(samp) # sample SD
+ }
> 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: 2.4668

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> cat("Mean of Sample Means:", mean_of_sample_means, "\n")
Mean of Sample Means: 2.4668
> cat("SD of Sample Means:", sd_of_sample_means, "\n")
SD of Sample Means: 0.07624874
> cat("Population Mean vs Mean of Sample Means:", pop_mean, "vs", mean_of_sample_means, "\n")
Population Mean vs Mean of Sample Means: 2.468 vs 2.4668
> cat("Population SD vs SD of Sample Means:", pop_sd_population, "vs", sd_of_sample_means, "\n")
Population SD vs SD of Sample Means: 1.599387 vs 0.07624874
> |
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