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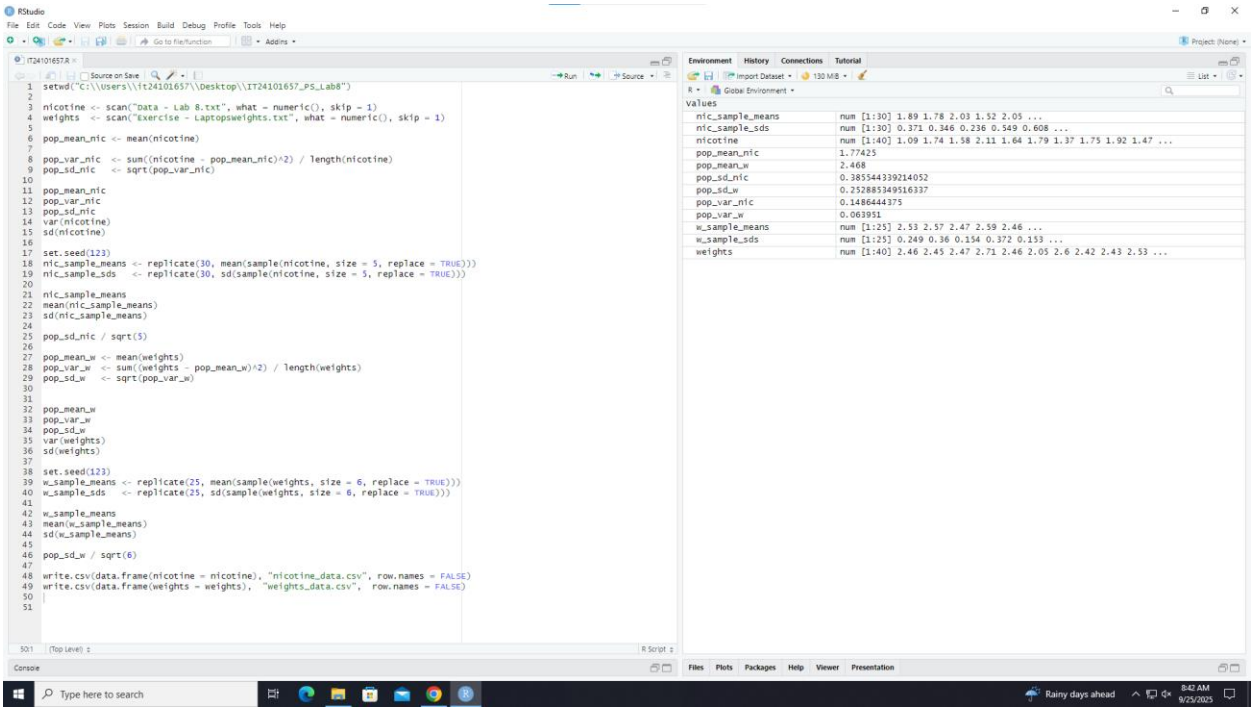
PS-Lab8



```
setwd("C:\\Users\\it24101657\\Desktop\\IT24101657_PS_Lab8")

nicotine <- scan("Data - Lab 8.txt", what = numeric(), skip = 1)
weights  <- scan("Exercise - Laptopsweights.txt", what = numeric(), skip = 1)

pop_mean_nic <- mean(nicotine)

pop_var_nic  <- sum((nicotine - pop_mean_nic)^2) / length(nicotine)
pop_sd_nic   <- sqrt(pop_var_nic)

pop_mean_nic
pop_var_nic
pop_sd_nic
var(nicotine)
sd(nicotine)

set.seed(123)
nic_sample_means <- replicate(30, mean(sample(nicotine, size = 5, replace = TRUE)))
nic_sample_sds   <- replicate(30, sd(sample(nicotine, size = 5, replace = TRUE)))

nic_sample_means
mean(nic_sample_means)
sd(nic_sample_means)

pop_sd_nic / sqrt(5)

pop_mean_w <- mean(weights)
pop_var_w  <- sum((weights - pop_mean_w)^2) / length(weights)
pop_sd_w   <- sqrt(pop_var_w)


pop_mean_w
pop_var_w
pop_sd_w
var(weights)
sd(weights)

set.seed(123)
w_sample_means <- replicate(25, mean(sample(weights, size = 6, replace = TRUE)))
w_sample_sds   <- replicate(25, sd(sample(weights, size = 6, replace = TRUE)))

w_sample_means
mean(w_sample_means)
sd(w_sample_means)

pop_sd_w / sqrt(6)

write.csv(data.frame(nicotine = nicotine), "nicotine_data.csv", row.names = FALSE)
write.csv(data.frame(weights = weights),  "weights_data.csv",  row.names = FALSE)
```

```
> setwd("C:\\Users\\it24101657\\Desktop\\IT24101657_PS_Lab8")
> nicotine <- scan("Data - Lab 8.txt", what = numeric(), skip = 1)
Read 40 items
> weights  <- scan("Exercise - Laptopsweights.txt", what = numeric(), skip = 1)
Read 40 items
> pop_mean_nic <- mean(nicotine)
> pop_var_nic  <- sum((nicotine - pop_mean_nic)^2) / length(nicotine)
> pop_sd_nic   <- sqrt(pop_var_nic)
> pop_mean_nic
[1] 1.77425
> pop_var_nic
[1] 0.1486444
> pop_sd_nic
[1] 0.3855443
> var(nicotine)
[1] 0.1524558
> sd(nicotine)
[1] 0.3904559
> set.seed(123)
> nic_sample_means <- replicate(30, mean(sample(nicotine, size = 5, replace = TRUE)))
> nic_sample_sds   <- replicate(30, sd(sample(nicotine, size = 5, replace = TRUE)))
> nic_sample_means
 [1] 1.886 1.782 2.034 1.518 2.046 1.688 1.772 1.638 1.716 1.850 1.598 1.848 1.604 1.800 1.916 2.116 1.606 1.594 1.884
[20] 2.124 1.590 1.562 1.836 1.744 1.494 1.542 1.854 1.914 1.834 1.538
> mean(nic_sample_means)
[1] 1.764267
> sd(nic_sample_means)
[1] 0.1811235
> pop_sd_nic / sqrt(5)
[1] 0.1724207
> pop_mean_w <- mean(weights)
> pop_var_w  <- sum((weights - pop_mean_w)^2) / length(weights)
> pop_sd_w   <- sqrt(pop_var_w)
> pop_mean_w
[1] 2.468
> pop_var_w
[1] 0.063951
> pop_sd_w
[1] 0.2528853
> var(weights)
[1] 0.06559077
> sd(weights)
[1] 0.2561069
> set.seed(123)
> w_sample_means <- replicate(25, mean(sample(weights, size = 6, replace = TRUE)))
> w_sample_sds   <- replicate(25, sd(sample(weights, size = 6, replace = TRUE)))
> w_sample_means
 [1] 2.530000 2.573333 2.473333 2.591667 2.456667 2.401667 2.590000 2.466667 2.401667 2.335000 2.586667 2.378333 2.381667
[14] 2.465000 2.485000 2.451667 2.385000 2.338333 2.428333 2.551667 2.538333 2.466667 2.470000 2.448333 2.475000
```

```
> mean(w_sample_means)
[1] 2.4668
> sd(w_sample_means)
[1] 0.07624874
> pop_sd_w / sqrt(6)
[1] 0.10324
> write.csv(data.frame(nicotine = nicotine), "nicotine_data.csv", row.names = FALSE)
> write.csv(data.frame(weights = weights),  "weights_data.csv",  row.names = FALSE)
```