

IT24104248

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```
data <- read.table("Exercise - Laptopsweights.txt", header = TRUE)
fix(data)
attach(data)

> data <- read.table("Exercise - Laptopsweights.txt", header = TRUE)
> fix(data)
> attach(data)
```

```
1)
colnames(data) <- c("weight")

population <- data$weight
popmn <- mean(population)
popvar <- var(population)
popsd <- sqrt(popvar)

print(paste("Population Mean:", popmn))
print(paste("Population SD:", popsd))

> colnames(data) <- c("weight")
> population <- data$weight
> popmn <- mean(population)
> popvar <- var(population)
> popsd <- sqrt(popvar)
> print(paste("Population Mean:", popmn))
[1] "Population Mean: 2.468"
> print(paste("Population SD:", popsd))
[1] "Population SD: 0.256106948813907"
```

2)

```
samples <- c()
n <- c()

for (i in 1:25){
  s <- sample(population, 6, replace = TRUE)
  samples <- cbind(samples, s)
  n <- c(n, paste('s',i))
}

colnames(samples) = n

s.means <- apply(samples, 2, mean)
s.vars <- apply(samples, 2, var)
s.sd <- sqrt(s.vars)

print(paste("Sample Mean:", s.means))
print(paste("Sample SD:", s.sd))

> samples <- c()
> n <- c()
> for (i in 1:25){
+   s <- sample(population, 6, replace = TRUE)
+   samples <- cbind(samples, s)
+   n <- c(n, paste('s',i))
+ }
> colnames(samples) = n
> s.means <- apply(samples, 2, mean)
> s.vars <- apply(samples, 2, var)
> s.sd <- sqrt(s.vars)
> print(paste("Sample Mean:", s.means))
[1] "Sample Mean: 2.38" "Sample Mean: 2.46166666666667" "Sample Mean: 2.56"
[4] "Sample Mean: 2.52833333333333" "Sample Mean: 2.42666666666667" "Sample Mean: 2.64166666666667"
[7] "Sample Mean: 2.30333333333333" "Sample Mean: 2.64" "Sample Mean: 2.45"
[10] "Sample Mean: 2.45" "Sample Mean: 2.49833333333333" "Sample Mean: 2.49666666666667"
[13] "Sample Mean: 2.38666666666667" "Sample Mean: 2.40833333333333" "Sample Mean: 2.51166666666667"
[16] "Sample Mean: 2.45" "Sample Mean: 2.54166666666667" "Sample Mean: 2.54833333333333"
[19] "Sample Mean: 2.57333333333333" "Sample Mean: 2.52" "Sample Mean: 2.32166666666667"
[22] "Sample Mean: 2.57833333333333" "Sample Mean: 2.46833333333333" "Sample Mean: 2.46666666666667"
[25] "Sample Mean: 2.49166666666667"
> print(paste("Sample SD:", s.sd))
[1] "Sample SD: 0.268849400222504" "Sample SD: 0.236593885522569" "Sample SD: 0.194730583114209"
[4] "Sample SD: 0.206728485377963" "Sample SD: 0.284300310704485" "Sample SD: 0.196307581785999"
[7] "Sample SD: 0.351776444161156" "Sample SD: 0.150332963783729" "Sample SD: 0.302059596768585"
[10] "Sample SD: 0.246333107803235" "Sample SD: 0.151051867471629" "Sample SD: 0.234918425558036"
[13] "Sample SD: 0.151613543810132" "Sample SD: 0.359689681067815" "Sample SD: 0.171279498675897"
[16] "Sample SD: 0.218723569831877" "Sample SD: 0.254591175547517" "Sample SD: 0.238614053791194"
[19] "Sample SD: 0.213603994968883" "Sample SD: 0.291958901217277" "Sample SD: 0.438060117639881"
[22] "Sample SD: 0.108151128827519" "Sample SD: 0.29795413517296" "Sample SD: 0.468643432330665"
[25] "Sample SD: 0.224001488090295"
```

1.

```
samplemean <- mean(s.means)
samplevars <- var(s.means)
samplesd <- sqrt(samplevars)

popmn
samplemean

truevar = popsd / 6
samplesd

truevar = popvar/6
samplevars

truesd<-sqrt(truevar)
samplesd
> samplemean <- mean(s.means)
> samplevars <- var(s.means)
> samplesd <- sqrt(samplevars)
> popmn
[1] 2.468
> samplemean
[1] 2.484133
> truevar = popsd / 6
> samplesd
[1] 0.08577414
> truevar = popvar/6
> samplevars
[1] 0.007357204
> truesd<-sqrt(truevar)
> samplesd
[1] 0.08577414
```