

```
> setwd("D:/Other/University/LabSheet/2Y/1st_SEM/PS/Lab08")
> data <- read.csv("Exercise - LaptopsWeights.txt", header = TRUE)
> fix(data)
> attach(data)
> attach(data)
```

The following object is masked from data (pos = 3):

weight.kg.

```
> samples <- c()
> n <- c()
> for(i in 1:25){
+   s <- sample(weight.kg., 6, replace = TRUE)
+   samples <- cbind(samples, s)
+   n <- c(n, i)
+ }
> colnames(samples) = n
> samples
```

	1	2	3	4	5	6	7	8	9	10	11	12	13
[1,]	2.53	2.85	2.65	2.06	2.46	2.65	2.57	2.43	2.05	2.28	2.43	2.45	2.47
[2,]	2.41	2.46	2.70	2.85	2.43	2.23	2.05	2.57	2.47	2.65	2.89	2.46	2.53
[3,]	2.61	2.46	2.32	2.05	2.47	2.06	2.57	2.66	2.47	2.05	2.05	2.53	2.70
[4,]	2.89	2.85	2.57	2.46	2.53	2.06	2.45	2.85	2.28	2.47	2.73	2.23	2.53
[5,]	2.20	2.51	1.71	2.28	2.75	2.73	2.73	2.65	2.41	2.13	2.47	2.20	2.57
[6,]	2.43	2.67	2.76	2.47	2.20	2.67	2.76	2.05	2.43	2.85	2.75	2.05	2.75
	14	15	16	17	18	19	20	21	22	23	24	25	
[1,]	2.53	2.70	2.05	2.05	2.76	2.23	2.89	2.65	2.20	2.66	2.20	2.65	
[2,]	2.47	2.61	2.20	2.85	2.67	2.47	2.42	2.45	2.46	2.57	2.53	2.05	
[3,]	2.47	2.61	2.85	2.47	2.57	2.66	2.89	2.76	2.76	2.47	2.45	2.46	
[4,]	2.57	2.13	2.66	2.41	2.28	2.42	2.73	2.89	2.65	2.46	2.76	2.05	
[5,]	2.46	2.60	2.43	2.57	2.20	2.57	2.60	2.61	2.67	2.51	2.46	2.13	
[6,]	2.43	2.89	2.53	2.71	2.13	2.46	2.47	2.46	2.32	2.32	2.06	2.42	

```
> s.mean <- apply(samples, 2, mean)
> s.vars <- apply(samples, 2, var)
> sampleMean <- mean(s.mean)
> sampleVars <- var(s.vars)
> popVar <- var(weight.kg.)
> trueVar = popVar/5
> trueVar
[1] 0.01311815
> sampleVars
[1] 0.01914071
>
```

```
> sampleMean
[1] 2.4828
>
```

```
> s.mean
      1      2      3      4      5      6      7      8
2.511667 2.633333 2.451667 2.361667 2.473333 2.400000 2.521667 2.535000
      9     10     11     12     13     14     15     16
2.351667 2.405000 2.553333 2.320000 2.591667 2.488333 2.590000 2.453333
     17     18     19     20     21     22     23     24
2.510000 2.435000 2.468333 2.666667 2.636667 2.510000 2.498333 2.410000
     25
2.293333
>
```

```
> s.vars
      s 1      s 2      s 3      s 4      s 5      s 6      s 7      s 8      s 9
0.03295 0.04058 0.02457 0.07353 0.25427 0.18252 0.05532 0.27248 0.24908
      s 10     s 11     s 12     s 13     s 14     s 15     s 16     s 17     s 18
0.22847 0.48507 0.21387 0.04508 0.04532 0.07058 0.13053 0.08142 0.15993
      s 19     s 20     s 21     s 22     s 23     s 24     s 25     s 26     s 27
0.54675 0.20075 0.02785 0.30590 0.17187 0.05302 0.13863 0.42247 0.04573
      s 28     s 29     s 30
0.19017 0.14227 0.02398
>
```

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