IT2120 - Probability and Statistics

Lab Sheet 08

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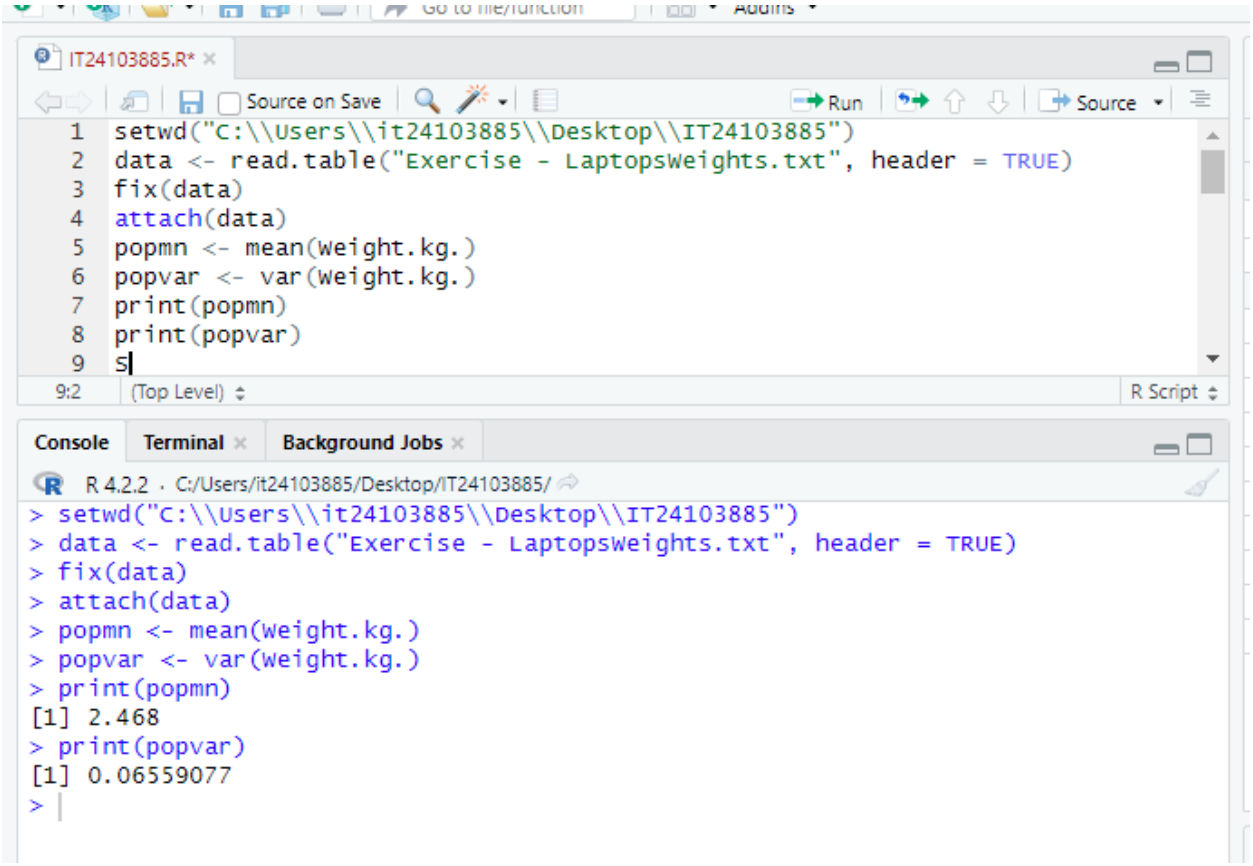
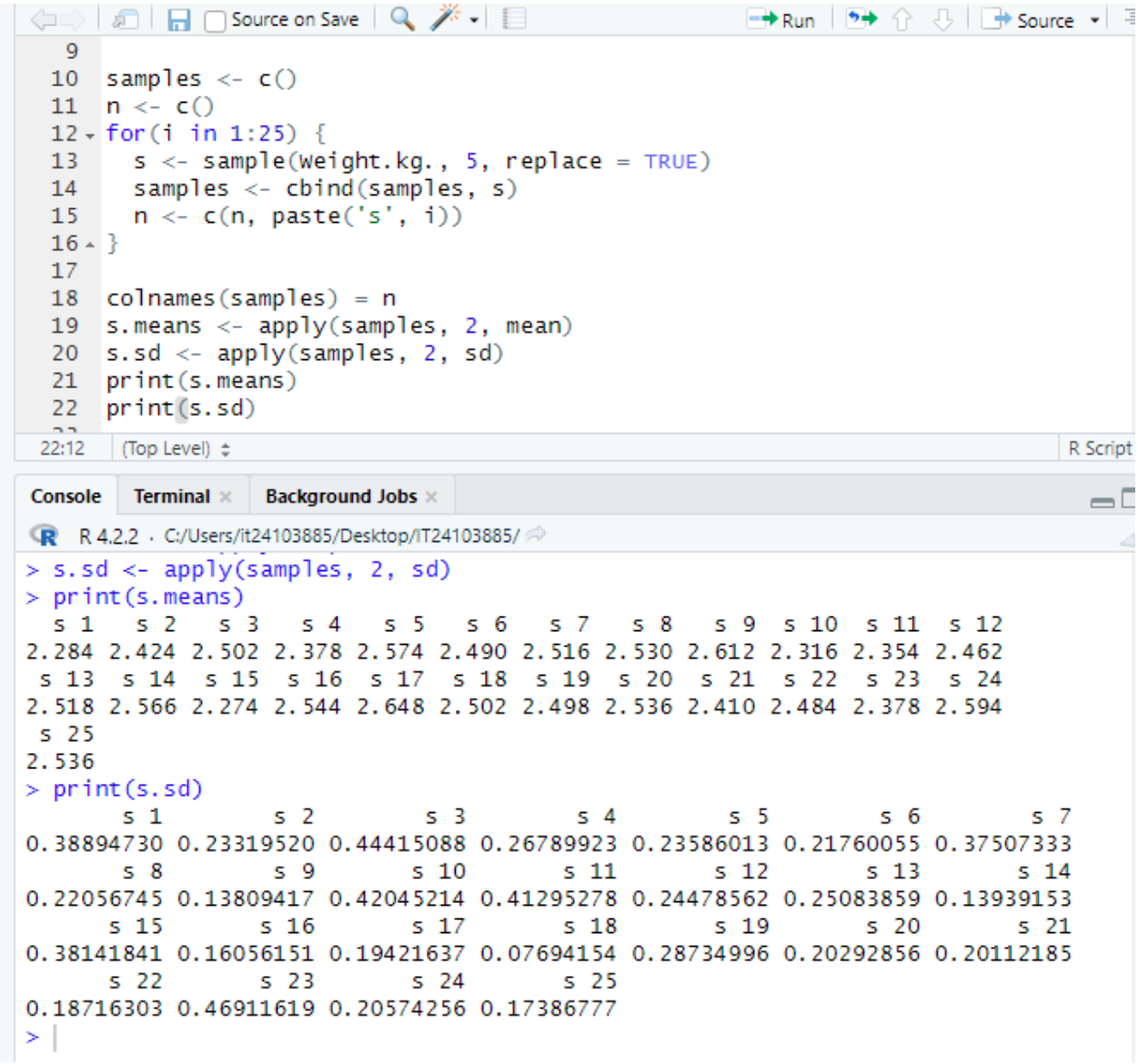
Instructions: Create a folder in your desktop with your registration number (Eg: "IT......"). You need to save the R script file and take screenshots of the command prompt with answers and save it in a word document inside the folder. Save both R script file and word document with your registration number (Eg: "IT....."). After you finish the exercise, zip the folder and upload the zip file to the submission link.

1. Calculate the population mean and population standard deviation of the laptop bag weights.



2. Draw 25 random samples of size 6 (with replacement) and calculate the sample mean and sample standard deviation for each sample.



```
Source on Save | Run | Source

 9
10 samples <- c()
11 n <- c()
12 for(i in 1:25) {
13   s <- sample(weight.kg., 5, replace = TRUE)
14   samples <- cbind(samples, s)
15   n <- c(n, paste('s', i))
16 }
17
18 colnames(samples) = n
19 s.means <- apply(samples, 2, mean)
20 s.sd <- apply(samples, 2, sd)
21 print(s.means)
22 print(s.sd)

22:12  (Top Level)                                   R Script

Console  Terminal  Background Jobs

R 4.2.2 · C:/Users/it24103885/Desktop/IT24103885/

> s.sd <- apply(samples, 2, sd)
> print(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
2.284 2.424 2.502 2.378 2.574 2.490 2.516 2.530 2.612 2.316 2.354 2.462
 s 13  s 14  s 15  s 16  s 17  s 18  s 19  s 20  s 21  s 22  s 23  s 24
2.518 2.566 2.274 2.544 2.648 2.502 2.498 2.536 2.410 2.484 2.378 2.594
 s 25
2.536
> print(s.sd)
       s 1        s 2        s 3        s 4        s 5        s 6        s 7
0.38894730 0.23319520 0.44415088 0.26789923 0.23586013 0.21760055 0.37507333
       s 8        s 9       s 10       s 11       s 12       s 13       s 14
0.22056745 0.13809417 0.42045214 0.41295278 0.24478562 0.25083859 0.13939153
      s 15       s 16       s 17       s 18       s 19       s 20       s 21
0.38141841 0.16056151 0.19421637 0.07694154 0.28734996 0.20292856 0.20112185
      s 22       s 23       s 24       s 25
0.18716303 0.46911619 0.20574256 0.17386777
>
```

3. Calculate the mean and standard deviation of the 25 sample means and state the relationship of them with true mean and true standard deviation.