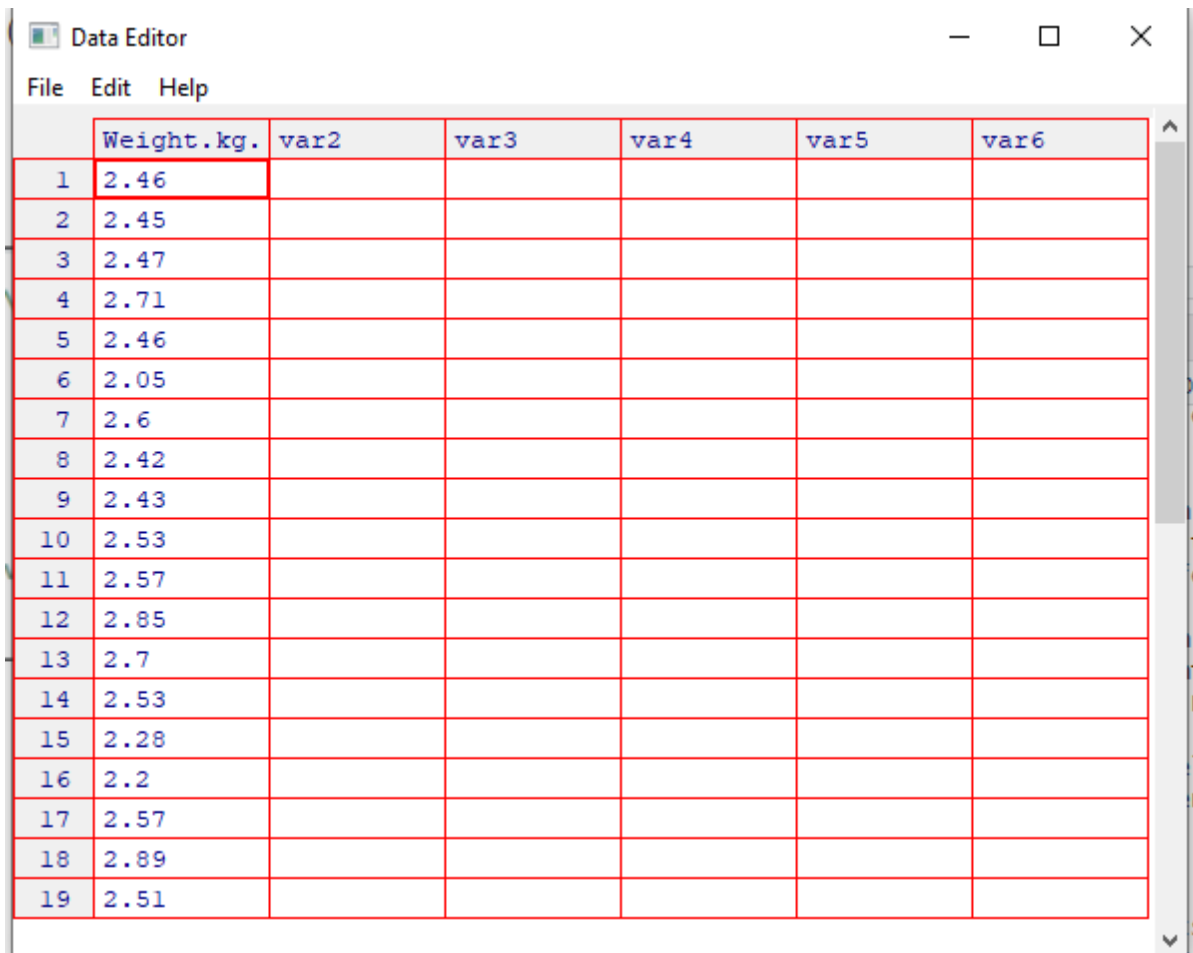


Probability and Statistics - IT2120

Lab Sheet 08

Exercise

1.



	Weight.kg.	var2	var3	var4	var5	var6
1	2.46					
2	2.45					
3	2.47					
4	2.71					
5	2.46					
6	2.05					
7	2.6					
8	2.42					
9	2.43					
10	2.53					
11	2.57					
12	2.85					
13	2.7					
14	2.53					
15	2.28					
16	2.2					
17	2.57					
18	2.89					
19	2.51					

```
Untitled1* x
← → | 📁 | 💾 | ☐ Source on Save | 🔍 | ✏️ | 📄
1 getwd()
2 setwd("/Users/kasunathauda/Desktop/IT24400066")
3 getwd()
4
5 #1
6 data<-read.table("Exercise - LaptopsWeights.txt",header=TRUE)
7 fix(data)
8 attach(data)
9

8:13 (Top Level) ⚡

Console Terminal x Background Jobs x
R 4.5.1 · ~/Desktop/IT24400066/ ↗

R version 4.5.1 (2025-06-13) -- "Great Square Root"
Copyright (C) 2025 The R Foundation for Statistical Computing
Platform: aarch64-apple-darwin20

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

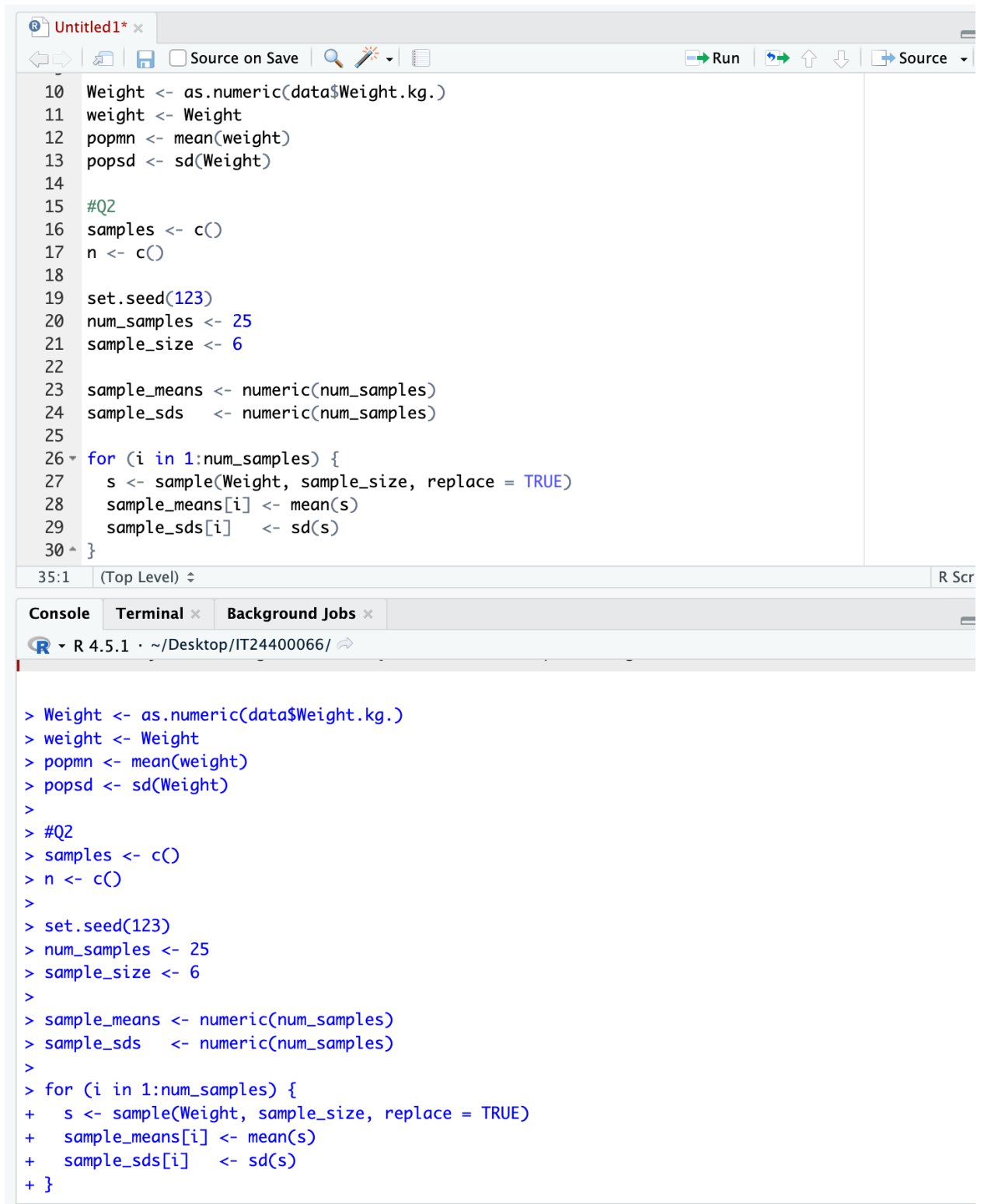
Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> getwd()
[1] "/Users/kasunathauda"
> setwd("/Users/kasunathauda/Desktop/IT24400066")
> getwd()
[1] "/Users/kasunathauda/Desktop/IT24400066"
>
> #1
> data<-read.table("Exercise - LaptopsWeights.txt",header=TRUE)
> fix(data)
```

2.



The image shows a screenshot of the RStudio IDE. The top pane displays a script file named 'Untitled1*' with R code. The code defines a variable 'Weight' from a dataset, calculates its mean ('popmn') and standard deviation ('popsd'), and then performs a simulation. The simulation involves generating 25 samples of size 6, calculating their means ('sample_means') and standard deviations ('sample_sds'), and storing them in vectors. The bottom pane shows the R console with the same code being executed, with line numbers 1 through 30 visible on the left.

```
10 Weight <- as.numeric(data$Weight.kg.)
11 weight <- Weight
12 popmn <- mean(weight)
13 popsd <- sd(Weight)
14
15 #Q2
16 samples <- c()
17 n <- c()
18
19 set.seed(123)
20 num_samples <- 25
21 sample_size <- 6
22
23 sample_means <- numeric(num_samples)
24 sample_sds <- numeric(num_samples)
25
26 for (i in 1:num_samples) {
27   s <- sample(Weight, sample_size, replace = TRUE)
28   sample_means[i] <- mean(s)
29   sample_sds[i] <- sd(s)
30 }
```

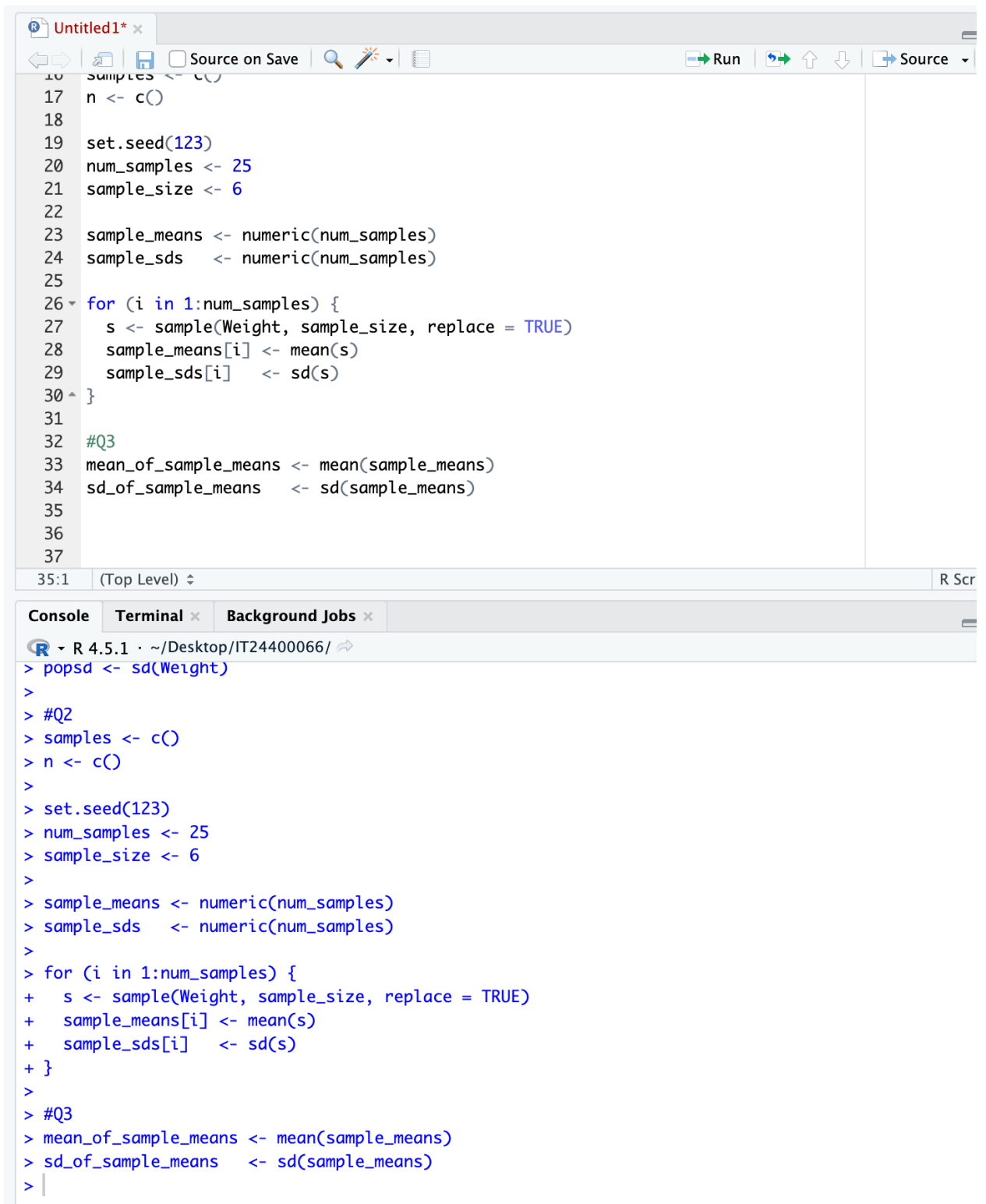
35:1 (Top Level) R Scr

Console Terminal Background Jobs

R 4.5.1 ~ /Desktop/IT24400066/

```
> Weight <- as.numeric(data$Weight.kg.)
> weight <- Weight
> popmn <- mean(weight)
> popsd <- sd(Weight)
>
> #Q2
> samples <- c()
> n <- c()
>
> set.seed(123)
> num_samples <- 25
> sample_size <- 6
>
> sample_means <- numeric(num_samples)
> sample_sds <- numeric(num_samples)
>
> for (i in 1:num_samples) {
+   s <- sample(Weight, sample_size, replace = TRUE)
+   sample_means[i] <- mean(s)
+   sample_sds[i] <- sd(s)
+ }
```

3.



The image shows a screenshot of the RStudio IDE. The top pane displays a script file named 'Untitled1*' with the following R code:

```
16 samples <- c()
17 n <- c()
18
19 set.seed(123)
20 num_samples <- 25
21 sample_size <- 6
22
23 sample_means <- numeric(num_samples)
24 sample_sds <- numeric(num_samples)
25
26 for (i in 1:num_samples) {
27   s <- sample(Weight, sample_size, replace = TRUE)
28   sample_means[i] <- mean(s)
29   sample_sds[i] <- sd(s)
30 }
31
32 #Q3
33 mean_of_sample_means <- mean(sample_means)
34 sd_of_sample_means <- sd(sample_means)
35
36
37
```

The bottom pane shows the R console with the following output:

```
R ▾ R 4.5.1 · ~/Desktop/IT24400066/ ↗
> popsd <- sd(Weight)
>
> #Q2
> samples <- c()
> n <- c()
>
> set.seed(123)
> num_samples <- 25
> sample_size <- 6
>
> sample_means <- numeric(num_samples)
> sample_sds <- numeric(num_samples)
>
> for (i in 1:num_samples) {
+   s <- sample(Weight, sample_size, replace = TRUE)
+   sample_means[i] <- mean(s)
+   sample_sds[i] <- sd(s)
+ }
>
> #Q3
> mean_of_sample_means <- mean(sample_means)
> sd_of_sample_means <- sd(sample_means)
> |
```