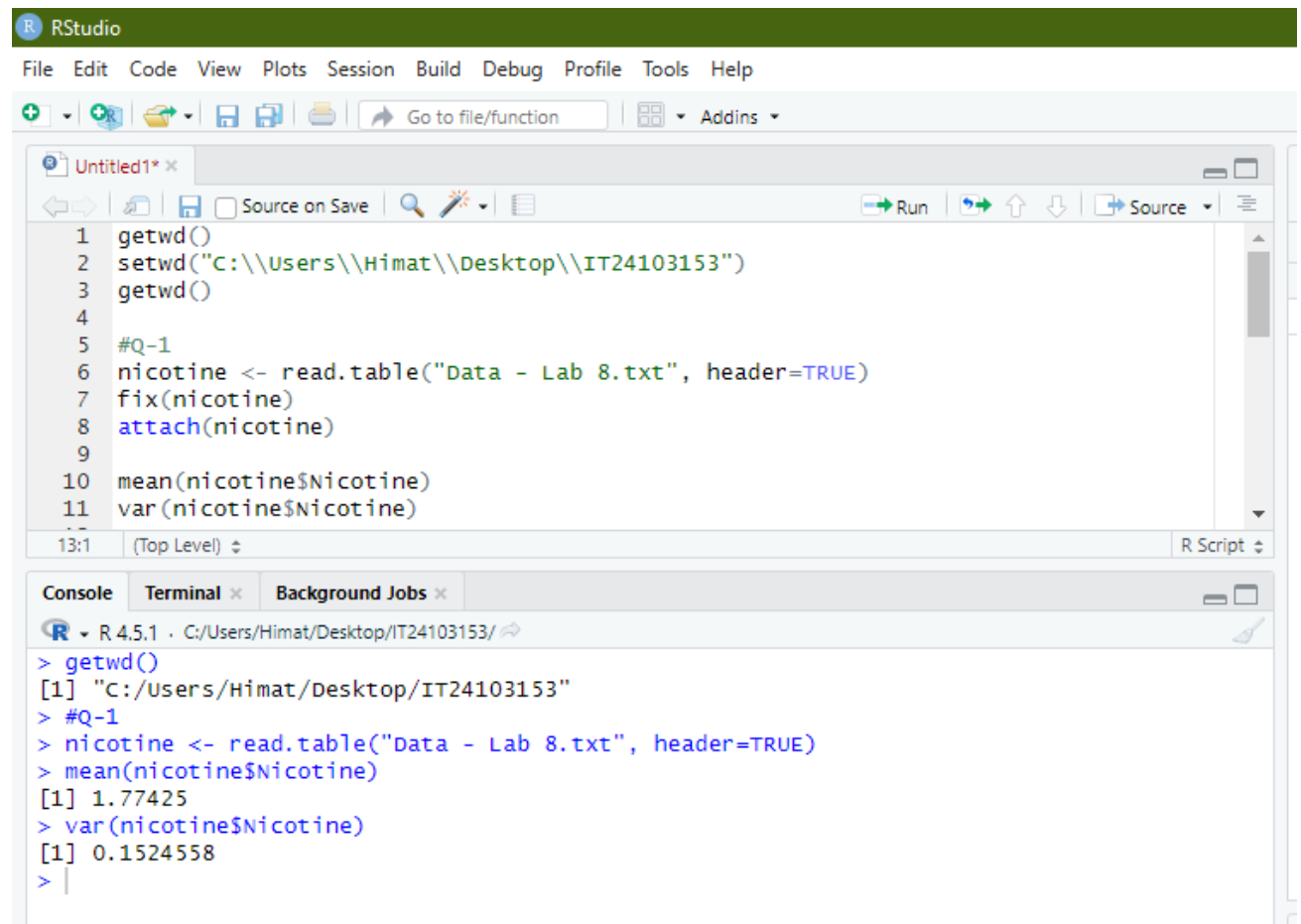


# IT2120 - Probability and Statistics

## Lab Sheet – 08

IT24103153

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The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. Below the menu is a toolbar with icons for file operations and a search bar. The main editor window, titled 'Untitled1\* x', contains the following R code:

```
1 getwd()
2 setwd("C:\\Users\\Himat\\Desktop\\IT24103153")
3 getwd()
4
5 #Q-1
6 nicotine <- read.table("Data - Lab 8.txt", header=TRUE)
7 fix(nicotine)
8 attach(nicotine)
9
10 mean(nicotine$Nicotine)
11 var(nicotine$Nicotine)
```

The status bar at the bottom of the editor shows '13:1 (Top Level)' and 'R Script'. Below the editor is a console window with tabs for Console, Terminal, and Background Jobs. The console shows the output of the R code:

```
> getwd()
[1] "C:/Users/Himat/Desktop/IT24103153"
> #Q-1
> nicotine <- read.table("Data - Lab 8.txt", header=TRUE)
> mean(nicotine$Nicotine)
[1] 1.77425
> var(nicotine$Nicotine)
[1] 0.1524558
>
```



RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

Untitled1\* x

Source on Save Run Source

```
9
10 mean(nicotine$Nicotine)
11 var(nicotine$Nicotine)
12
13 #Q-2
14 samples <- c()
15 n <- c()
16
17 set.seed(123)
18 num_samples <- 25
19 sample_size <- 6
20
21 sample_means <- numeric(num_samples)
22 sample_sds <- numeric(num_samples)
23
24 for(i in 1:30){
25   s <- sample(nicotine$Nicotine, size=5, replace=TRUE)
26   sample_means[i] <- mean(s)
27   sample_vars[i] <- var(s)
28 }
29
```

30:1 (Top Level) R Script

Console Terminal Background Jobs

R 4.5.1 C:/Users/Himat/Desktop/IT24103153/

```
> #Q-2
> 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 1:30){
+   s <- sample(nicotine$Nicotine, size=5, replace=TRUE)
+   sample_means[i] <- mean(s)
+   sample_vars[i] <- var(s)
+ }
```

```
30 #Q-3
31 mean(sample_means)
32 var(sample_means)
33
```

32:1 (Top Level) R Script

Console Terminal Background Jobs

R 4.5.1 C:/Users/Himat/Desktop/IT24103153/

```
> #Q-3
> mean(sample_means)
[1] 0.07544
> var(sample_means)
[1] 0.1422798
```