

# Faculty of Computing

## Year 2 Semester 1 (2025)

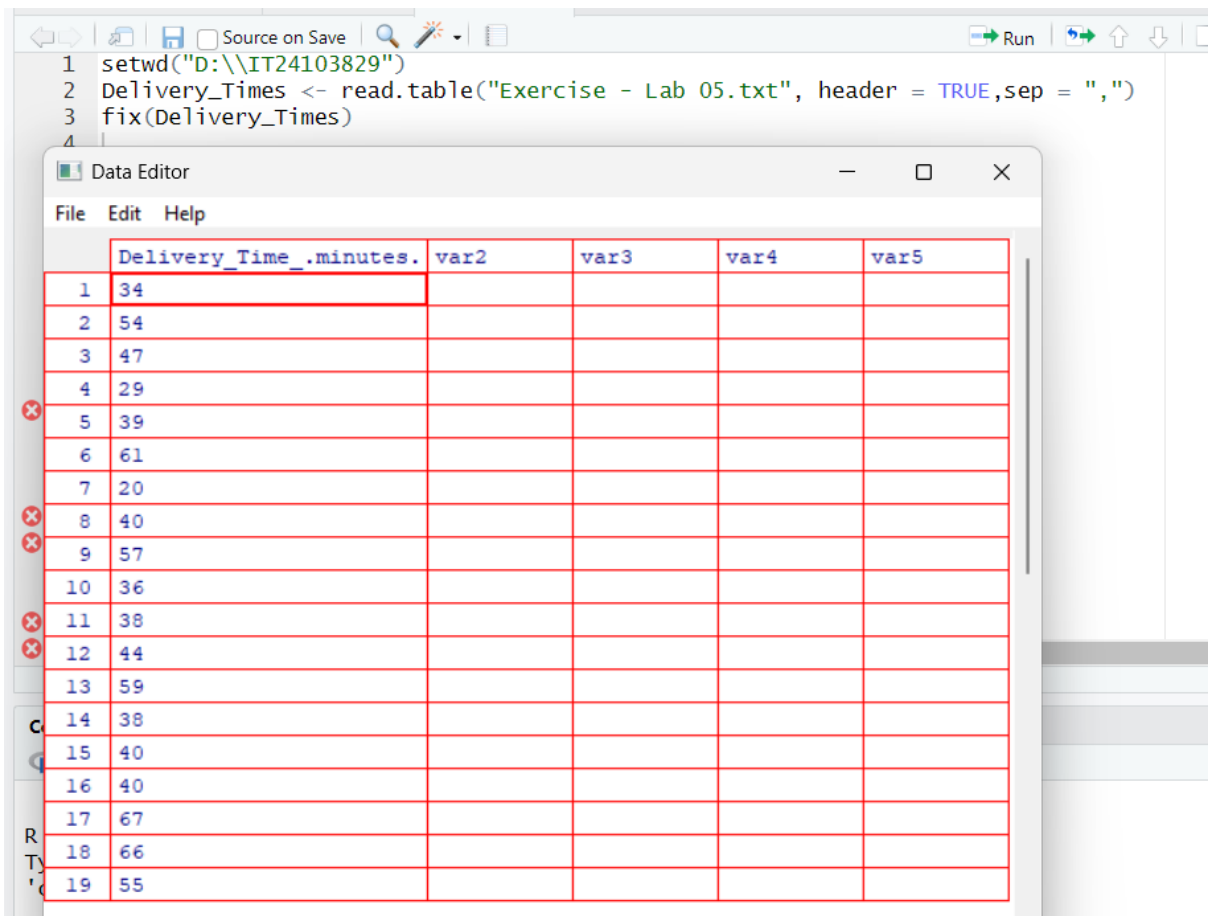
### IT2120 - Probability and Statistics

### Lab Sheet 05

#### Exercise

**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. Import the dataset ('Exercise – Lab 05.txt') into R and store it in a data frame called "Delivery Times".



The screenshot shows the R Studio interface. The script editor contains the following code:

```
1 setwd("D:\\IT24103829")
2 Delivery_Times <- read.table("Exercise - Lab 05.txt", header = TRUE, sep = ",")
3 fix(Delivery_Times)
4
```

The Data Editor window displays a data frame with 19 rows and 5 columns. The first column is labeled 'Delivery\_Time\_.minutes.' and contains numerical values. The other four columns are labeled 'var2', 'var3', 'var4', and 'var5' and are currently empty.

	Delivery_Time_.minutes.	var2	var3	var4	var5
1	34				
2	54				
3	47				
4	29				
5	39				
6	61				
7	20				
8	40				
9	57				
10	36				
11	38				
12	44				
13	59				
14	38				
15	40				
16	40				
17	67				
18	66				
19	55				

2. Draw a histogram for deliver times using nine class intervals where the lower limit is 20 and upper limit is 70. Use right open intervals.

```
histogram <- hist(X1,  
  main = "Histogram for Delivery Times",  
  xlab = "Delivery Time",  
  breaks = seq(20, 70, length.out = 10),  
  right = FALSE,  
  col = "lightblue",  
  border = "black")
```



3. Comment on the shape of the distribution.

```
> summary(Delivery_Times$X1)  
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.   
 20.00  36.00   42.50   43.75  54.00   67.00
```

4. Draw a cumulative frequency polygon (ogive) for the data in a separate plot.

```
# Q4: Cumulative Frequency Polygon (Ogive)
# Use same breaks to build a frequency table, then cumulative sum
breaks_seq <- seq(20, 70, length.out = 10)

freq_obj <- hist(Delivery_Times$X1,
                 breaks = breaks_seq,
                 right = FALSE,
                 plot = FALSE)

cum_freq <- cumsum(freq_obj$counts)

# x-values for ogive points are the UPPER class boundaries (right-open breaks)
x_points <- freq_obj$breaks[-1]

# Plot ogive
plot(x_points, cum_freq, type = "o", pch = 16,
     xlab = "Delivery Time",
     ylab = "Cumulative Frequency",
     main = "Cumulative Frequency Polygon (Ogive)")
grid()
```

