

Lab Exercise 5

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

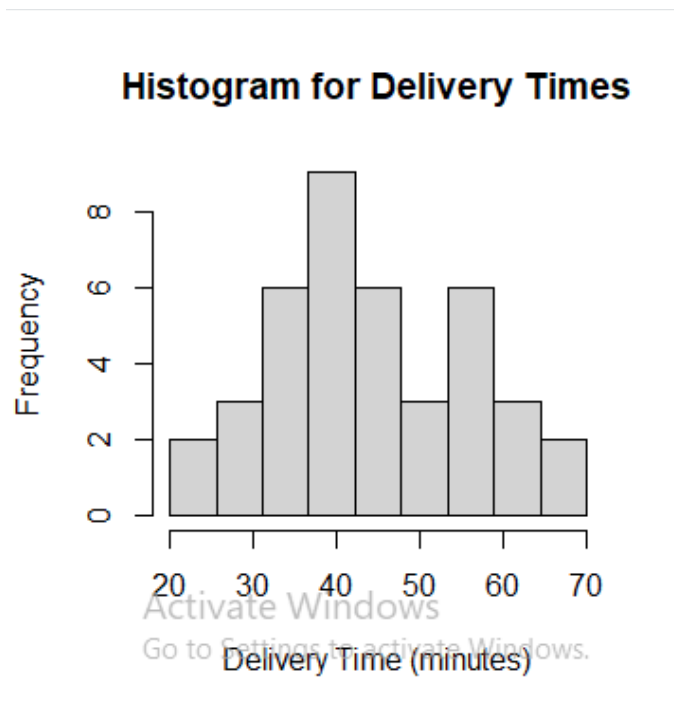
```
getwd()
setwd("C:\\Users\\it24102510\\Desktop\\IT24102510")

Delivery_Times <- read.table("Exercise - Lab 05.txt", header = TRUE, sep = ",")
```

02) 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.

```
# Rename the column and attach
names(Delivery_Times) <- "Delivery_Time"
attach(Delivery_Times)

# Create histogram
histogram <- hist(Delivery_Time,
                  main = "Histogram for Delivery Times",
                  breaks = seq(20, 70, length = 10),
                  right = FALSE,
                  xlab = "Delivery Time (minutes)")
```



03) Comment on the shape of the distribution.

Looking at the graph, the first thing you notice is that it has two main "bumps" or peaks. This suggests that there isn't just one typical delivery time, but two.

The most common delivery time is between **35 and 40 minutes**, as that's where the tallest bar is. However, there's a second, smaller peak around the **55 to 60-minute** mark, showing that a significant number of deliveries also cluster around that longer time frame. Overall, the shape is fairly balanced and doesn't lean heavily to one side.

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

```
# calculate cumulative frequencies|
breaks <- histogram$breaks
cum_freq <- cumsum(histogram$counts)

# Create cumulative frequency polygon
new <- c(0, cum_freq[-length(cum_freq)]) # Prepend 0 and shift values
plot(breaks, c(new, cum_freq[length(cum_freq)]),
     type = 'l',
     main = "Cumulative Frequency Polygon for Delivery Times",
     xlab = "Delivery Time (minutes)",
     ylab = "Cumulative Frequency",
     ylim = c(0, max(cum_freq)))
points(breaks, c(new, cum_freq[length(cum_freq)]), pch = 16)

# Combine breaks and cumulative frequencies
cbind(upper = breaks, CumFreq = c(new, cum_freq[length(cum_freq)]))
```

