

PS Lab 05 IT24103893

Example 02

```
# 01.

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

cat("Dataset structure:\n")
str(Delivery_Times)
cat("\nFirst few rows:\n")
head(Delivery_Times)

> Delivery_Times <- read.table('Exercise - Lab 05.txt', header = TRUE)
>
> cat("Dataset structure:\n")
Dataset structure:
> str(Delivery_Times)
'data.frame': 40 obs. of 1 variable:
 $ Delivery_Time_.minutes.: int 34 54 47 29 39 61 20 40 57 36 ...
> cat("\nFirst few rows:\n")

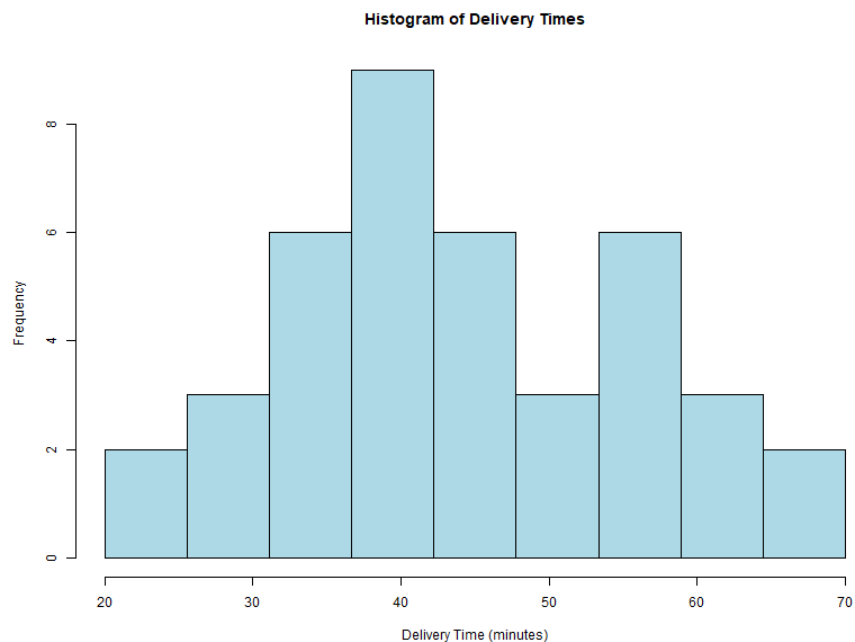
First few rows:
> head(Delivery_Times)
  Delivery_Time_.minutes.
1                      34
2                      54
3                      47
4                      29
5                      39
6                      61
```

```
# 2.

breaks <- seq(20, 70, length.out = 10)

cat("\nclass intervals (right open):\n")
intervals <- paste0("(", head(breaks, -1), ", ", tail(breaks, -1), ")")
print(intervals)

hist(Delivery_Times$Delivery_Time_.minutes.,
     breaks = breaks,
     right = TRUE,
     main = "Histogram of Delivery Times",
     xlab = "Delivery Time (minutes)",
     ylab = "Frequency",
     col = "lightblue",
     border = "black",
     xlim = c(20, 70))
> hist(Delivery_Times$Delivery_Time_.minutes.,
+      breaks = breaks,
+      right = TRUE,
+      main = "Histogram of Delivery Times",
+      xlab = "Delivery Time (minutes)",
+      ylab = "Frequency",
+      col = "lightblue",
+      border = "black",
+      xlim = c(20, 70))
```



```
# 3.
```

```
cat("\n3. Shape of the distribution:\n")
dist_shape <- "The distribution appears to be approximately symmetric with a slight right skew. "
dist_shape <- paste0(dist_shape, "Most delivery times are concentrated between 35-55 minutes. ")
dist_shape <- paste0(dist_shape, "There are fewer deliveries at the extremes (very fast or very slow delivery times).")
cat(dist_shape, "\n")
```

```
3. Shape of the distribution:
```

```
> dist_shape <- "The distribution appears to be approximately symmetric with a slight right skew. "
> dist_shape <- paste0(dist_shape, "Most delivery times are concentrated between 35-55 minutes. ")
> dist_shape <- paste0(dist_shape, "There are fewer deliveries at the extremes (very fast or very slow delivery times).")
> cat(dist_shape, "\n")
The distribution appears to be approximately symmetric with a slight right skew. Most delivery times are concentrated between 35-55 minutes. There are fewer deliveries at the extremes (very fast or very slow delivery times).
>
```

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```
# 4.
```

```
freq <- hist(Delivery_Times$Delivery_Time_.minutes., breaks = breaks, plot = FALSE)$counts
cum_freq <- cumsum(freq)
```

```
cat("\nFrequency distribution:\n")
freq_table <- data.frame(Interval = intervals, Frequency = freq, Cumulative = cum_freq)
print(freq_table)
```

```
plot(breaks[-1], cum_freq,
     type = "o",
     pch = 16,
     col = "red",
     main = "Cumulative Frequency Polygon (ogive) of Delivery Times",
     xlab = "Delivery Time (minutes)",
     ylab = "Cumulative Frequency",
     xlim = c(20, 70),
     ylim = c(0, max(cum_freq) + 5))
```

```
grid()
```

```
text(breaks[-1], cum_freq, labels = cum_freq, pos = 3, col = "blue")
```

```
png("delivery_times_histogram.png", width = 800, height = 600)
```

```
hist(Delivery_Times$Delivery_Time_.minutes.,
     breaks = breaks,
     right = TRUE,
     main = "Histogram of Delivery Times",
     xlab = "Delivery Time (minutes)",
     ylab = "Frequency",
     col = "lightblue",
     border = "black",
     xlim = c(20, 70))
dev.off()
```

```
png("delivery_times_ogive.png", width = 800, height = 600)
```

```
plot(breaks[-1], cum_freq,
     type = "o",
     pch = 16,
     col = "red",
     main = "Cumulative Frequency Polygon (ogive) of Delivery Times",
     xlab = "Delivery Time (minutes)",
     ylab = "Cumulative Frequency",
     xlim = c(20, 70),
     ylim = c(0, max(cum_freq) + 5))
```

```
grid()
```

```
text(breaks[-1], cum_freq, labels = cum_freq, pos = 3, col = "blue")
```

```
dev.off()
```

```
cat("\nAnalysis completed successfully!\n")
```

```
cat("Plots have been saved as 'delivery_times_histogram.png' and 'delivery_times_ogive.png'\n")
```

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```
> freq <- hist(Delivery_Times$Delivery_Time_.minutes., breaks = breaks, plot = FALSE)$counts
> cum_freq <- cumsum(freq)
```

```
> cat("\nFrequency distribution:\n")
```

```
Frequency distribution:
```

```
> freq_table <- data.frame(Interval = intervals, Frequency = freq, Cumulative = cum_freq)
> print(freq_table)
```

	Interval	Frequency	Cumulative
1	(20, 25.5555555555556]	2	2
2	(25.5555555555556, 31.1111111111111]	3	5
3	(31.1111111111111, 36.6666666666667]	6	11
4	(36.6666666666667, 42.2222222222222]	9	20
5	(42.2222222222222, 47.7777777777778]	6	26
6	(47.7777777777778, 53.3333333333333]	3	29
7	(53.3333333333333, 58.8888888888889]	6	35
8	(58.8888888888889, 64.4444444444444]	3	38
9	(64.4444444444444, 70]	2	40

```
>
```

```
> plot(breaks[-1], cum_freq,
+      type = "o",
+      pch = 16,
+      col = "red",
+      main = "Cumulative Frequency Polygon (ogive) of Delivery Times",
+      xlab = "Delivery Time (minutes)",
+      ylab = "Cumulative Frequency",
+      xlim = c(20, 70),
+      ylim = c(0, max(cum_freq) + 5))
Error in plot.new() : figure margins too large
```

```
>
```

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Cumulative Frequency Polygon (Ogive) of Delivery Times

