

IT2120 - Probability and Statistics

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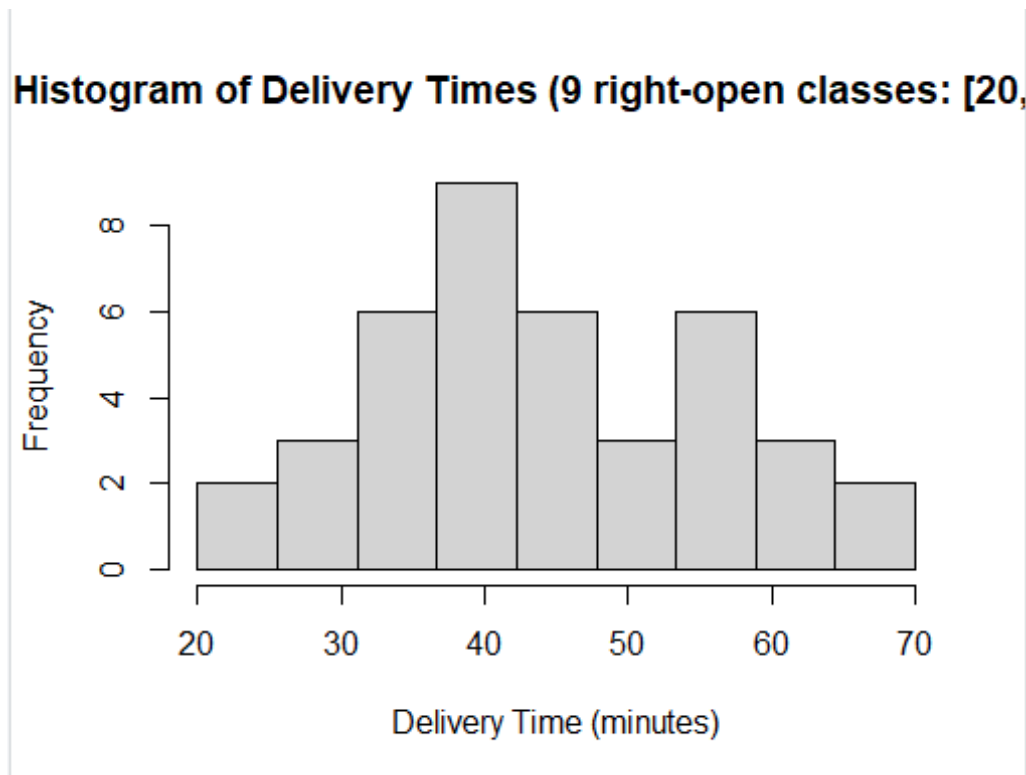
IT No: IT24100419

Question 1

```
> #Question 1  
> `Delivery Times` <- read.table("Exercise - Lab 05.txt", header = TRUE)  
> dt <- `Delivery Times`[[1]]
```

Question 2

```
> #Question 2  
> lower <- 20  
> upper <- 70  
> k <- 9  
> width <- (upper - lower) / k  
> breaks <- seq(lower, upper, by = width)  
> hist(dt,  
+     breaks = breaks,  
+     right = FALSE,  
+     include.lowest = TRUE,  
+     main = "Histogram of Delivery Times (9 right-open classes: [20,70))",  
+     xlab = "Delivery Time (minutes)",  
+     ylab = "Frequency")
```



Question 3

```
> #Question 3
> mean_dt <- mean(dt)
> median_dt <- median(dt)
> sd_dt <- sd(dt)
> m2 <- mean((dt - mean_dt)^2)
> m3 <- mean((dt - mean_dt)^3)
> skew_g1 <- m3 / (m2^(3/2))
> cat("Mean =", mean_dt, "\n")
Mean = 43.75
> cat("Median =", median_dt, "\n")
Median = 42.5
> cat("Standard Deviation =", sd_dt, "\n")
Standard Deviation = 11.58414
> cat("Skewness (g1) =", skew_g1, "\n")
Skewness (g1) = 0.04626816
```

Question 4

```
> #Question 4
> freq <- hist(dt, breaks = breaks, right = FALSE, include.lowest = TRUE, plot = FALSE)
> cumfreq <- cumsum(freq$counts)
> upper_bounds <- freq$breaks[-1]
> plot(upper_bounds, cumfreq, type = "o",
+      main = "Cumulative Frequency Polygon (Ogive)",
+      xlab = "Upper Class Boundary",
+      ylab = "Cumulative Frequency")
> grid()
```

