Sri Lanka Institute of Information Technology

Lab Submission
Lab Sheet 05

IT24104309

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Probability and Statistics | IT2120

B.Sc. (Hons) in Information Technology

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

```
Untitled1* ×
        Source on Save                                                                          Run        Source
    1  setwd("C:\\Users\\IT24104309\\Desktop\\Lab 05\\IT24104309")
    2
    3  Delivery_Times<-read.table("Exercise - Lab 05.txt", header=TRUE)
    4  fix(Delivery_Times)
    5  attach(Delivery_Times)
    6
> Delivery_Times<-read.table("Exercise - Lab 05.txt", header=TRUE)
> fix(Delivery_Times)
> attach(Delivery_Times)
```

Question 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.

```
    7  histogram <- hist(Delivery_Time_.minutes., main="Histogram for Delivery Times",
    8                    breaks = seq(20, 70, length = 10), right = FALSE)
    9
> histogram <- hist(Delivery_Time_.minutes., main="Histogram for Delivery Times",
+                   breaks = seq(20, 70, length = 10), right = FALSE)
```

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Histogram for Delivery Times
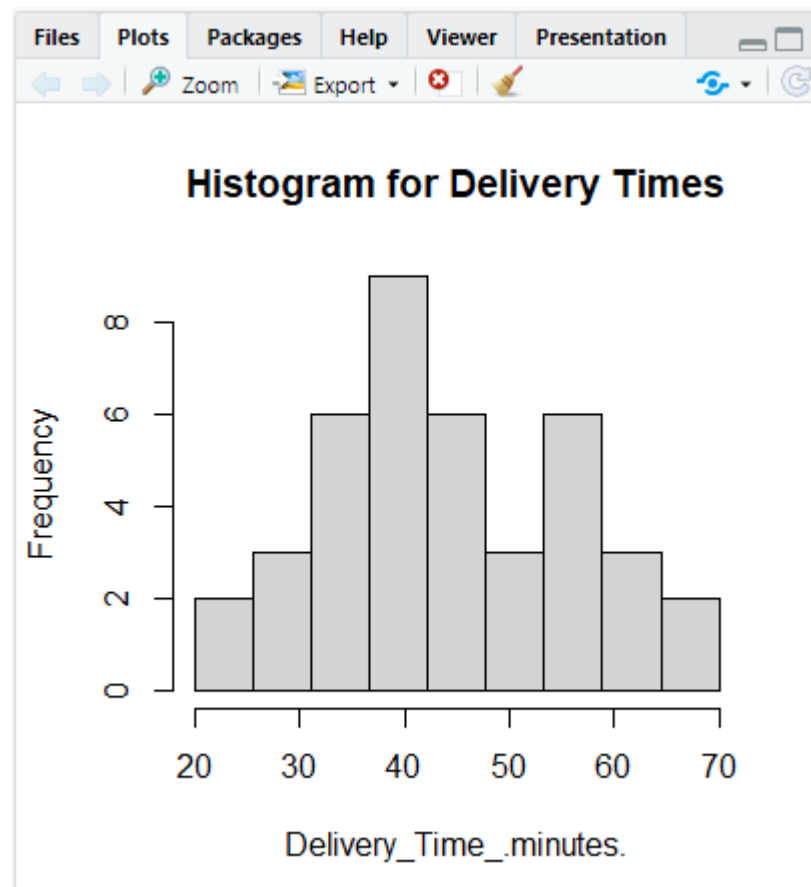
Question 03: Comment on the shape of the distribution.

The Histogram has a single high peak. Therefore, it is unimodal.

The long tail of the distribution extends to the right. Therefore, it is Skewed Right/Positively Skewed.

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

```
10  breaks <- round(histogram$breaks)
11  freq <- histogram$counts
12  mids <- histogram$mids
13
14  classes <- c()
15
16 - for(i in 1:length(breaks)-1){
17      classes[i] <- paste0("[", breaks[i], ",", breaks[i-1], ")")
18 - }
19  cbind(Classes = classes, Frequency = freq)
20
21  cum.freq <- cumsum(freq)
22  new<-c()
23 - for(i in 1:length(breaks)){
24 -    if(i==1){
25        new[i]=0
26 -    } else {
27        new[i]= cum.freq[i-1]
28 -    }
29 - }
30
31  plot(breaks, new, type = "l", main = "Cumalative Frequency Polygon for Delivery Times",
32        xlab = "Delivery Times (minutes)", ylab = "Cumalative Frequency",
33        ylim = c(0, max(cum.freq)))
```

```
> breaks <- round(histogram$breaks)
> freq <- histogram$counts
> mids <- histogram$mids
> classes <- c()
> for(i in 1:length(breaks)-1){
+    classes[i] <- paste0("[", breaks[i], "," breaks[i-1], ")")
```

```
> for(i in 1:length(breaks)-1){
+     classes[i] <- paste0("[", breaks[i], ",", breaks[i-1], ")")
+ }
> cbind(Classes = classes, Frequency = freq)
       Classes    Frequency
 [1,] "[20,)"     "2"
 [2,] "[26,20)"   "3"
 [3,] "[31,26)"   "6"
 [4,] "[37,31)"   "9"
 [5,] "[42,37)"   "6"
 [6,] "[48,42)"   "3"
 [7,] "[53,48)"   "6"
 [8,] "[59,53)"   "3"
 [9,] "[64,59)"   "2"
> cum.freq <- cumsum(freq)
> new<-c()
> for(i in 1:length(breaks)){
+     if(i==1){
+         new[i]=0
+     } else {
+         new[i]= cum.freq[i-1]
+     }
+ }
> plot(breaks, new, type = "1", main = "Cumalative Frequency Polygon for Delivery Times",
+        xlab = "Delivery Times (minutes)", ylab = "Cumalative Frequency",
+        ylim = c(0, max(cum.freq)))

> plot(breaks, new, type = "l", main = "Cumalative Frequency Polygon for Delivery Times",
+        xlab = "Delivery Times (minutes)", ylab = "Cumalative Frequency",
+        ylim = c(0, max(cum.freq)))
```