# Flipped Assignment 16

Group 5

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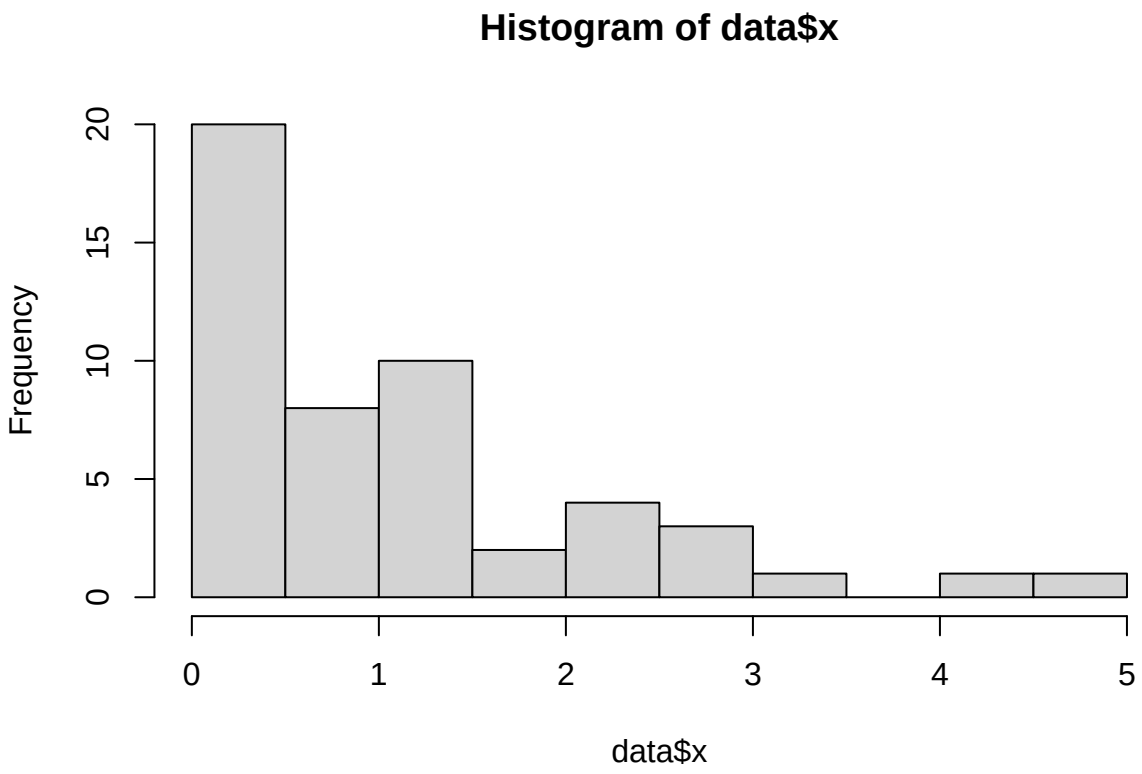
### Input Data and Function Definition

```
setwd('G:/OneDrive - Texas Tech University/IE 5344 Statistical Data Analysis/Flipped Assignment 16')
data <- read.csv('data-likelihood-exponential.csv', header = TRUE)
head(data)
```

```
##           x
## 1 2.48465207
## 2 1.49390524
## 3 1.02541872
## 4 0.64174611
## 5 0.25274364
## 6 0.09842084
```

### Picking parameters.

```
hist(data$x)
```




So, we pick three candidates of $\lambda$, 2, 1, and $\frac{1}{1.5}$.

### Part a.

```
data1 <- data[1:25,]
Log_likelihood <- c()
Log_likelihood_1 <- sum(log(dexp(data1,r=2)))
Log_likelihood_2 <- sum(log(dexp(data1,r=1)))
Log_likelihood_3 <- sum(log(dexp(data1,r=1/1.5)))
Log_likelihood <- rbind(Log_likelihood,Log_likelihood_1,Log_likelihood_2,Log_likelihood_3)
which.max(Log_likelihood)
```

```
## [1] 2
```

So, $\lambda = 1$ could be the best candidate among these three choices.

### Part b.

```
Log_likelihood_b <- c()
Log_likelihood_b1 <- sum(log(dexp(data$x,r=2)))
Log_likelihood_b2 <- sum(log(dexp(data$x,r=1)))
Log_likelihood_b3 <- sum(log(dexp(data$x,r=1/1.5)))
Log_likelihood_b <- rbind(Log_likelihood_b,Log_likelihood_b1,Log_likelihood_b2,Log_likelihood_b3)
which.max(Log_likelihood_b)
```

```
## [1] 2
```

So, $\lambda = 1$ also could be the best candidate among these three choices.

## Part c.

In previous two parts, the best candidates are the same, which are $\lambda = 1$.