Statistical Inference Course Project - Part 1
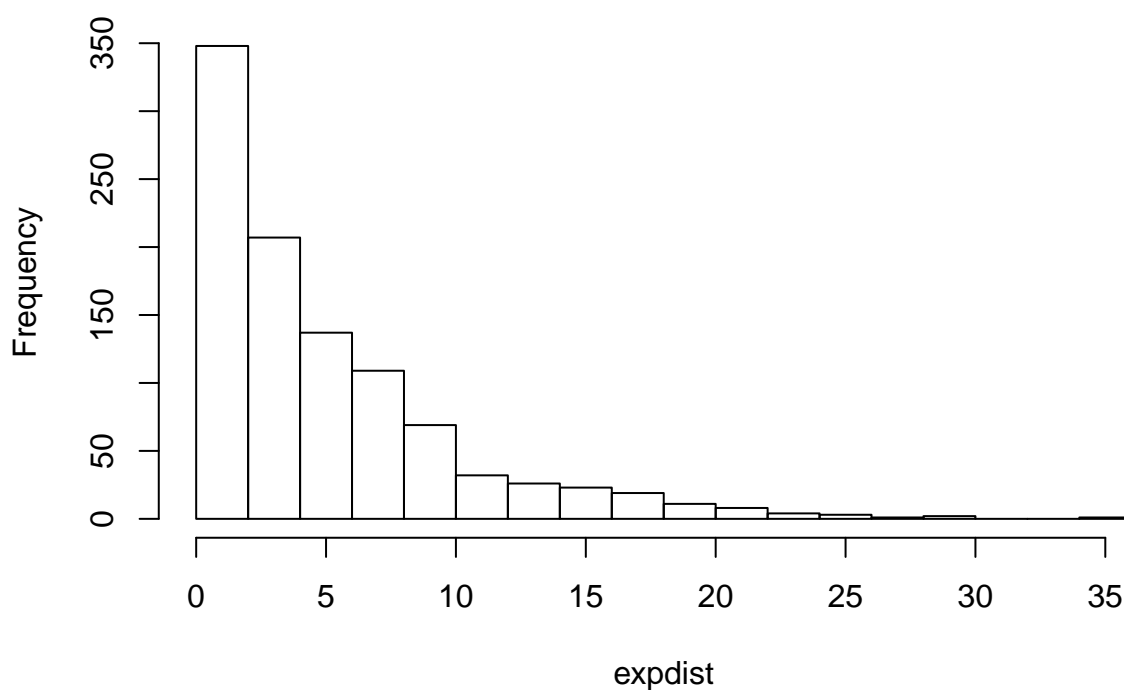
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## Simulation to investigate the exponential distribution in R and compare it with the Central Limit Theorem

Here's an example of an exponential distribution simulated in R with n = 1000 and lambda = 0.2.

Exponential distribution rexp(n=1000,lambda=0.2)

The following graph is result from simulation of taking means of samples of 10000 exponential distributions each with a size of 40 and lambda = 0.2.

Histogram of samplemeans
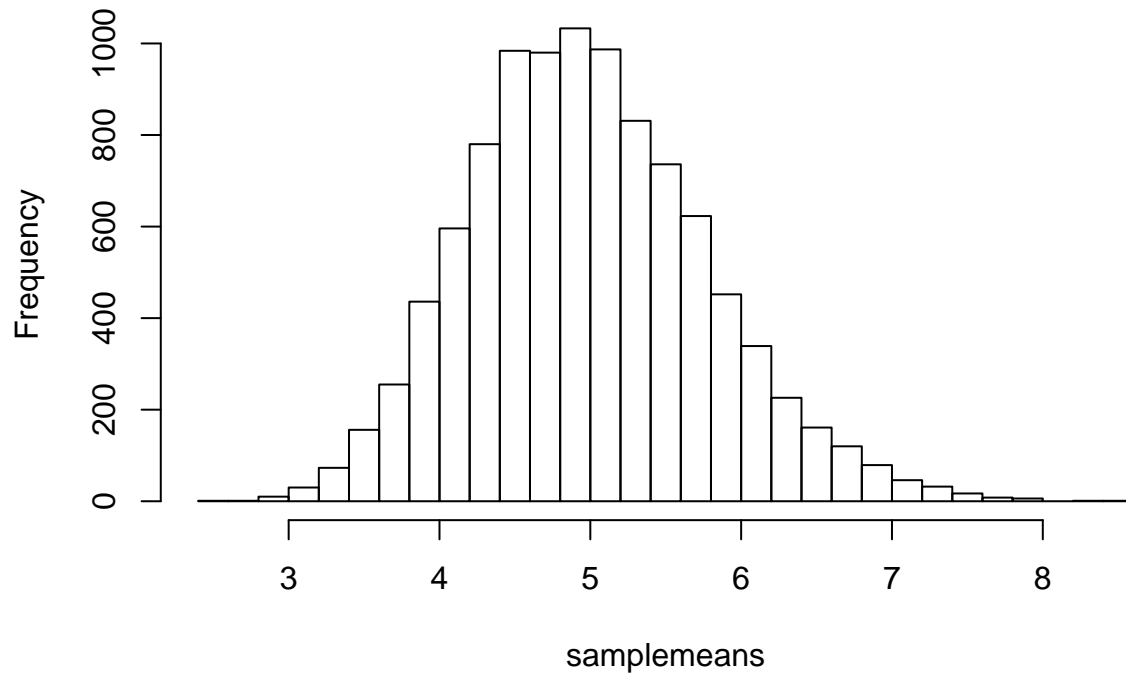
samplemeans

You can see that the mean of the sample mean and the variance of the sample mean are respectively a good approximation of values predicted by the central limit theorem.

```
## Mean of the n sample means = 4.98614

## Expected Mean of the n sample means (1/lambda) = 5

## Standard Deviation of the n sample means = 0.7866194

## Expected Standard Deviation of the n sample means (1/lambda)/sqrt(n) =  0.7905694
```