Stat Interfence: Exp Distribution

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Investigation of exponential distribution (rexp)

If we compare the sample mean of mexs with the theoretical mean (1/lambda) we see that with 1000 samples the mean has converged very close to the theoretical mean:

```
mean(mexs) # sample mean
```

```
## [1] 5.009921
```

```
1/0.2 # theoretical mean
```

```
## [1] 5
```

```
mean(mexs) - 1/0.2
```

```
## [1] 0.009920541
```

If we now look at the sample variance and compare it with the theoretical variance 1/lambda^2 we see that the sample variance is tighter (this doesn't really make sense)

```
var(mexs) # sample variance
```

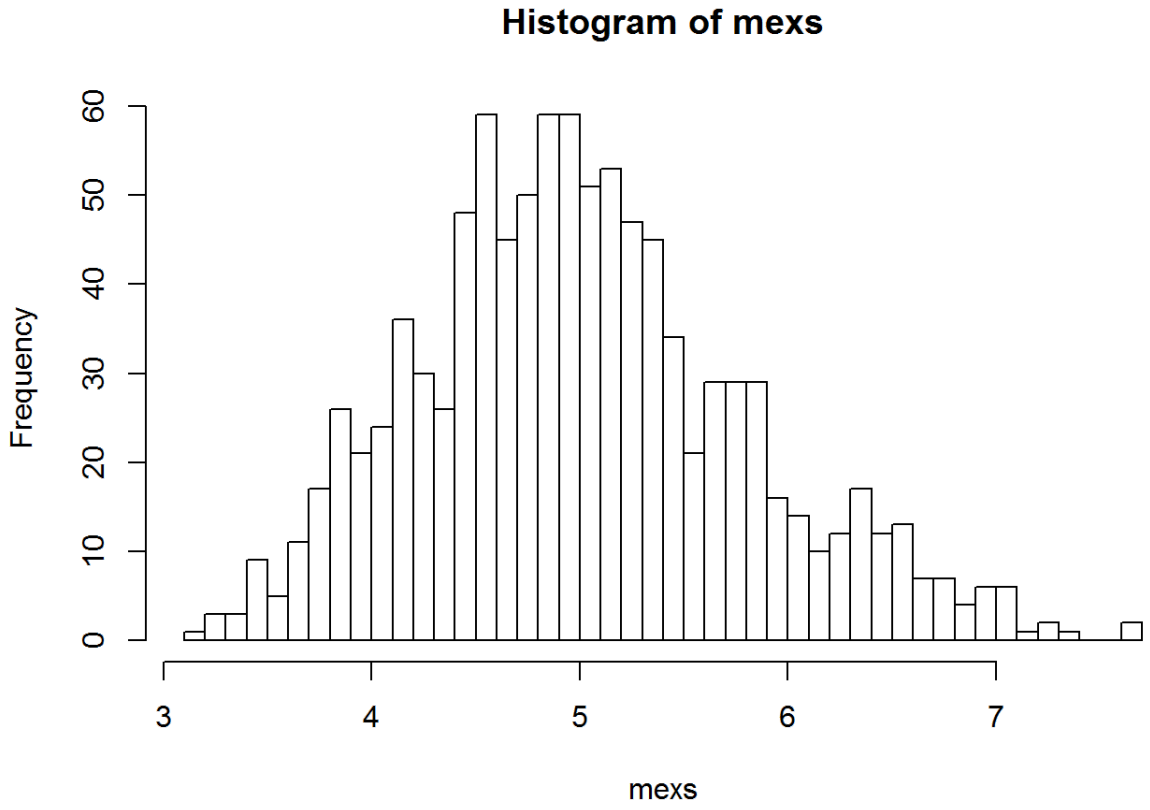
```
## [1] 0.6284917
```

```
1/(0.2^2) # theoretical variance
```

```
## [1] 25
```

If we look at a histogram of the distribution we can see that it is approximately normal

```
hist(mexs, 40)
```



And as we increase the sample size from n=1,000 to n=10,000 we see the histogram converging to a normal distribution as expected per the central limit theorem