Slidify Pitch Presentation

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Central Limit Theorem

The Central Limit Theorem (CLT) states that, given certain conditions, the arithmetic mean of a sufficiently large number of iterates of independent random variables, each with a well-defined expected value and well-defined variance, will be approximately normally distributed, regardless of the underlying distribution.

--- .class #id

Exponential Distribution

Exponential Distribution in R is computed using

```
rexp(n,lambda)
```

For this scenario, we use n will be 50 (iterations) and lambda as 0.5.

We will try for 500 simulations and see if CLT is good.

Simulating for 500

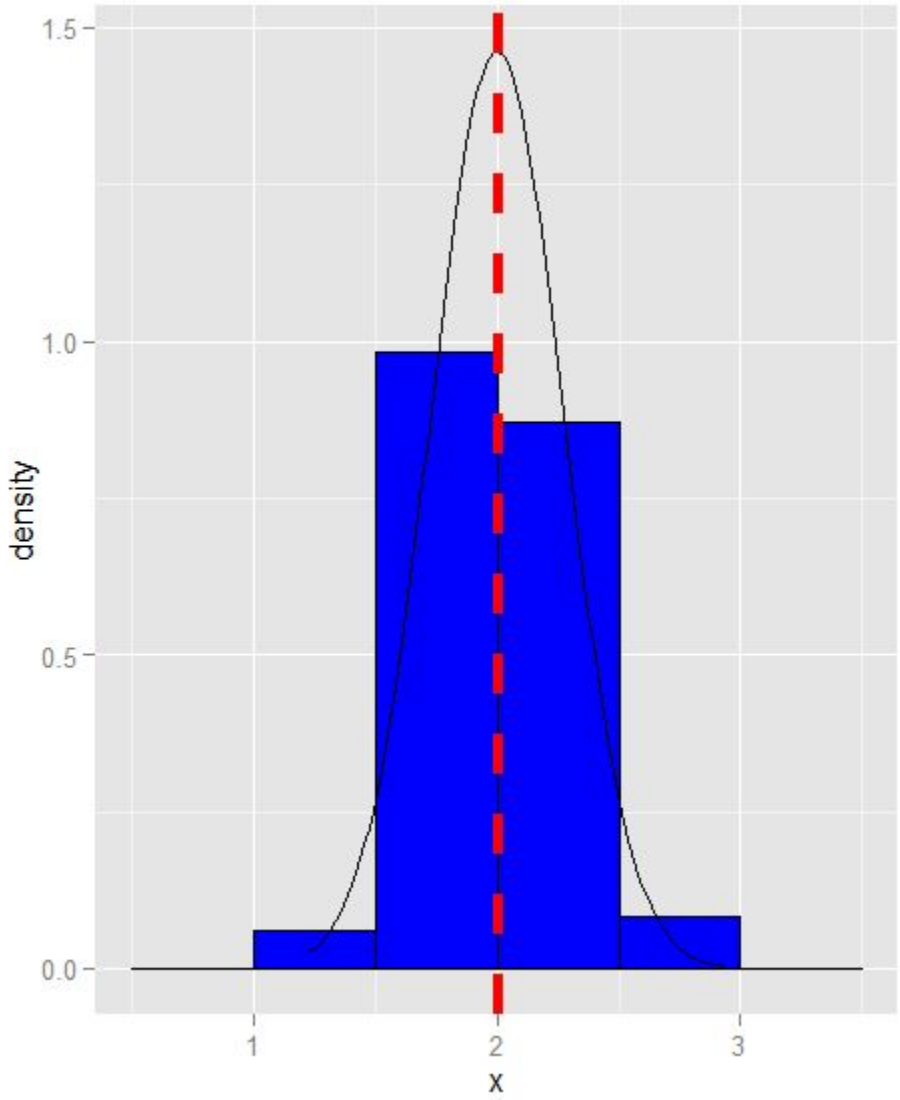
The code below does the simulation and Plots the graph

```
sampleMe data.f(x sapp(sim, functme(re(n,{
lambda))}))
sampleM mea(sampleMeans$x)
theoretica 1/lambda
varian s(sampleMeans$x)
theoreticalV (1/lamb sq(n)

# Plotting graph
library(ggplot2)
ggplot(data = sampleMeans, aes(x = x)) +
    geom_histogram(aes(y=..density..), fill = I('
                   binwidth = lambda, color = I('
    stat_function(fun = dnorm, arg = list(mean = 
variance))
```

Graph

```
## Warning: package 'ggplot2' was built under R v
```



The above figure shows the theoretical mean in dotted red line and the sample mean. The actual sample mean is 1.9984 and the theoretical mean is 2.

Conclusion

We can conclude that the CLT (Central Limit Theorem) holds good as the sample mean is close to the theoretical mean.