Statistical Inference Assignment

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Import Libraries:

#Load libraries to help library(ggplot2)

```
ECHO=TRUE
set.seed(2222)
lambda=0.2
exponentials=40
simulationMeans = NULL
for (i in 1:1500)simulationMeans = c(simulationMeans,mean(rexp(exponentials, lambd
a)))

summary(simulationMeans)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   2.847   4.450   4.928   4.967   5.441   7.248
```

```
mean(simulationMeans)
```

```
## [1] 4.967263
```

```
#calculate the theoretical Mean
theoreticalmean<-lambda^-1
theoreticalmean
```

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

```
abs(mean(simulationMeans)-theoreticalmean)
```

```
## [1] 0.03273665
```

```
#Sample variance
simulationvar<-var(simulationMeans)
simulationvar
```

```
## [1] 0.5899575
```

```
#Theoretical Variance
Theoreticalvar<-(lambda * sqrt(exponentials))^-2
Theoreticalvar
```

```
## [1] 0.625
```

```
# Comparison
simulationvar-Theoreticalvar
```

```
## [1] -0.0350425
```

Including Plots