Statistical\_Inference\_Course\_Project\_Part\_1

lambda <- 0.2  
  
#theoretical mean of exp.dist  
e\_mn <- 1/lambda

#create simulation means   
mns = NULL  
  
for(i in 1:1000) mns = c(mns, mean(rexp(40, lambda)))  
  
#sample mean = mean of means  
mean(mns)

## [1] 4.998461

#variance of sample = square of sd  
sd(mns)^2

## [1] 0.5656391

#plot hist of 200 random exp of lambda 2  
set.seed(1)  
hist(rexp(1000, lambda), col = "cyan", breaks = 20, main = "Simulation of exponential distribution and sample means for 0.2^x", xlab="")   
  
#plot means of 1000 simulations  
hist(mns, add = T, col = "magenta")  
  
#plot population mean   
abline(v = e\_mn, lwd = 3, lty =2)

