Stat641 HW12

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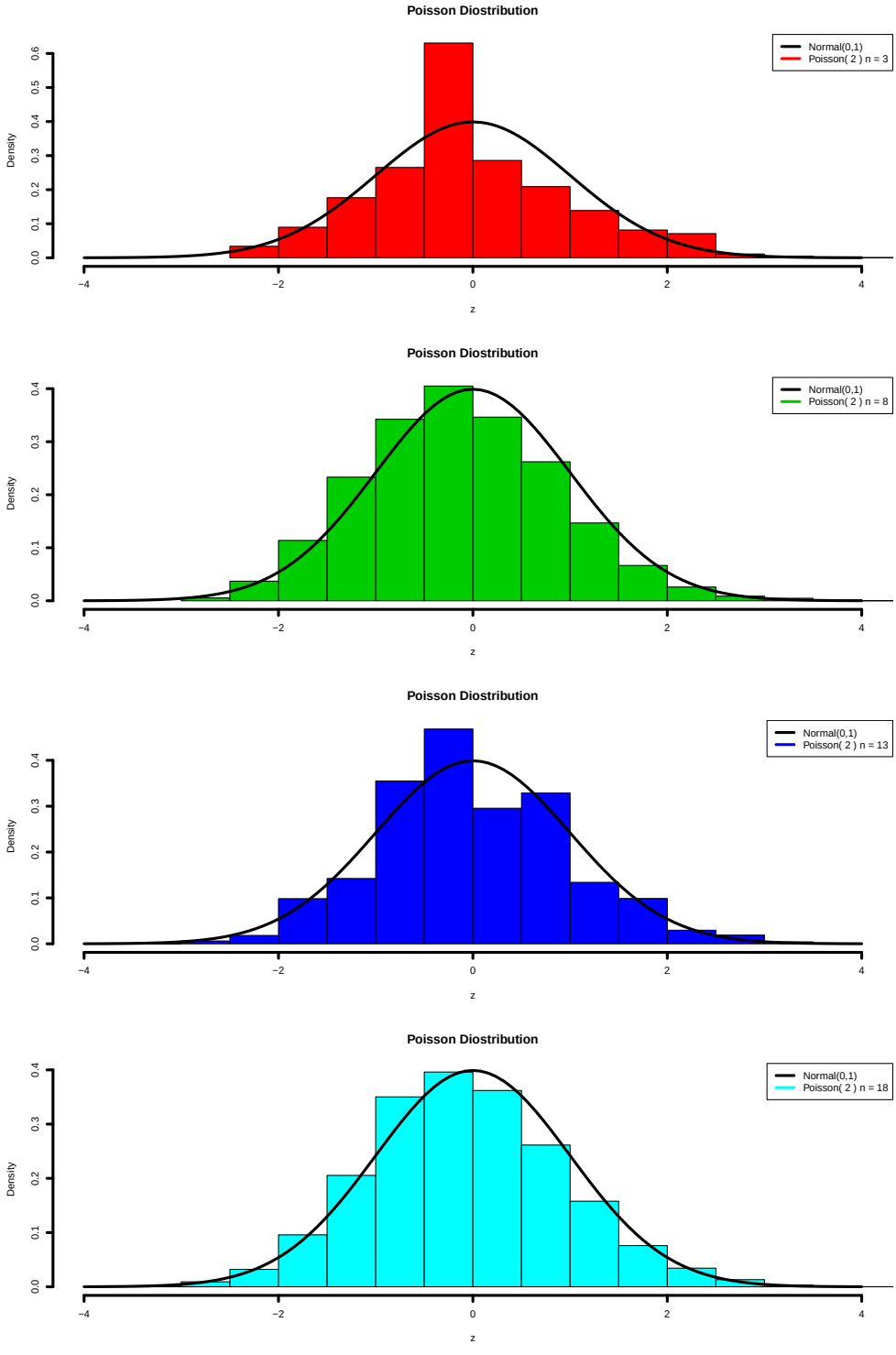
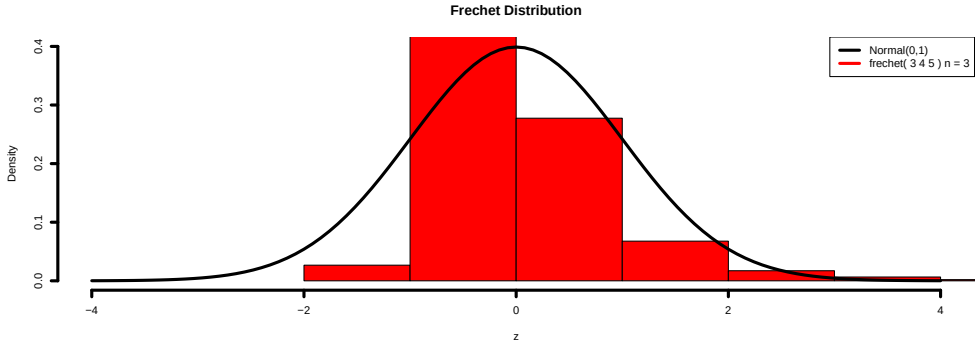
Code:

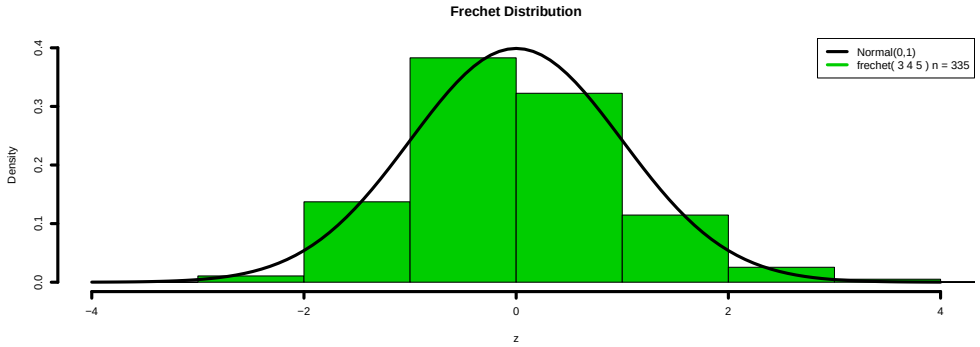
```
> source("../../Stat624/project/frechet.R")
> sim.Poisson <- function(mu=2,n=c(seq(3,18,length=4)),N=10000){
+     par(mfrow=c(4,1))
+     for (i in 1:length(n)){
+       X <- matrix(rpois(N*n[i],mu),N,n[i])
+       z <- ( apply(X,1,mean) - mu ) / (sqrt(mu/n[i]))
+       hist(z,col=1+i,lwd=3,prob=T,xlim=c(-4,4),main="Poisson Diostribution")
+       curve(dnorm(x),from=-4,to=4,lwd=3,add=T)
+       legend("topright",legend=c("Normal(0,1)",paste("Poisson(",mu,")","n =",n[i])),
+              col=c(1,i+1),lwd=3 )
+     }
+ }
> sim.frechet <- function(a=3,m=4,s=5,n=seq(3,999,length=4),N=10000){
+     params <- theoretical.stat.frechet(a,m,s)
+     mu = params[1]; ss = params[3]
+
+     par(mfrow=c(4,1))
+     for (i in 1:length(n)){
+       X <- matrix(rfrechet(N*n[i],a,m,s),N,n[i])
+       z <- ( apply(X,1,mean) - mu ) / sqrt(ss/n[i])
+       hist(z,col=1+i,lwd=3,prob=T,breaks=20,xlim=c(-4,4),ylim=c(0,.4),
+            main="Frechet Distribution")
+       curve(dnorm(x),from=-4,to=4,lwd=3,add=T)
+       legend("topright",
+              legend=c("Normal(0,1)",paste("frechet(",a,m,s,")","n =",n[i])),
+              col=c(1,i+1),lwd=3)
+     }
+ }
```

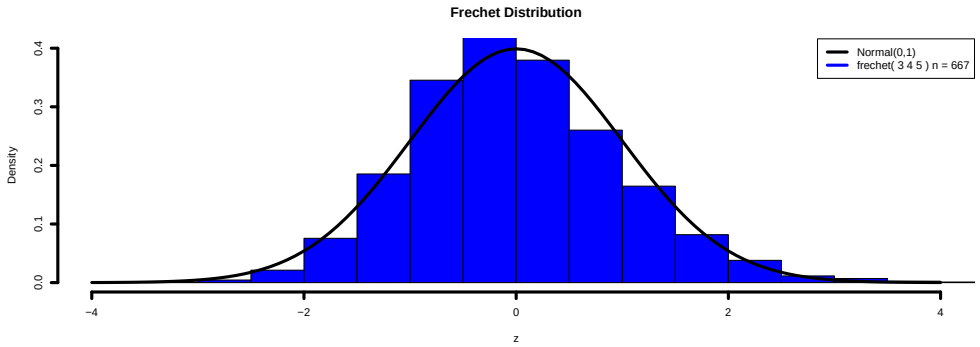
Graphs

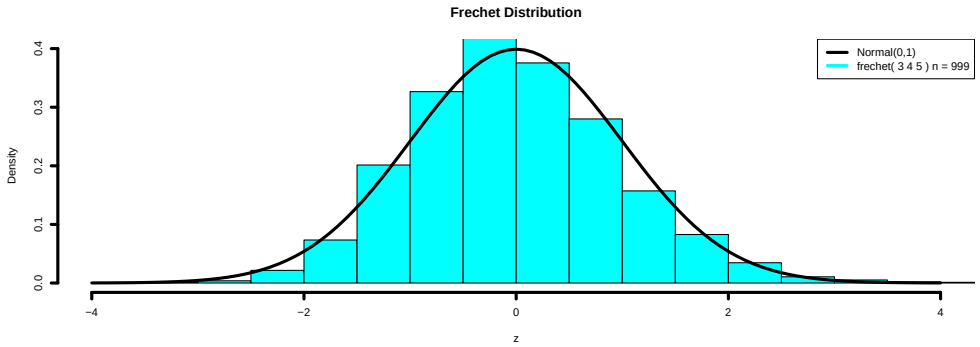


For sample size 18, the distribution begins to look like a standard normal.









For sample size 1000, the distribution begins to look like a standard normal.