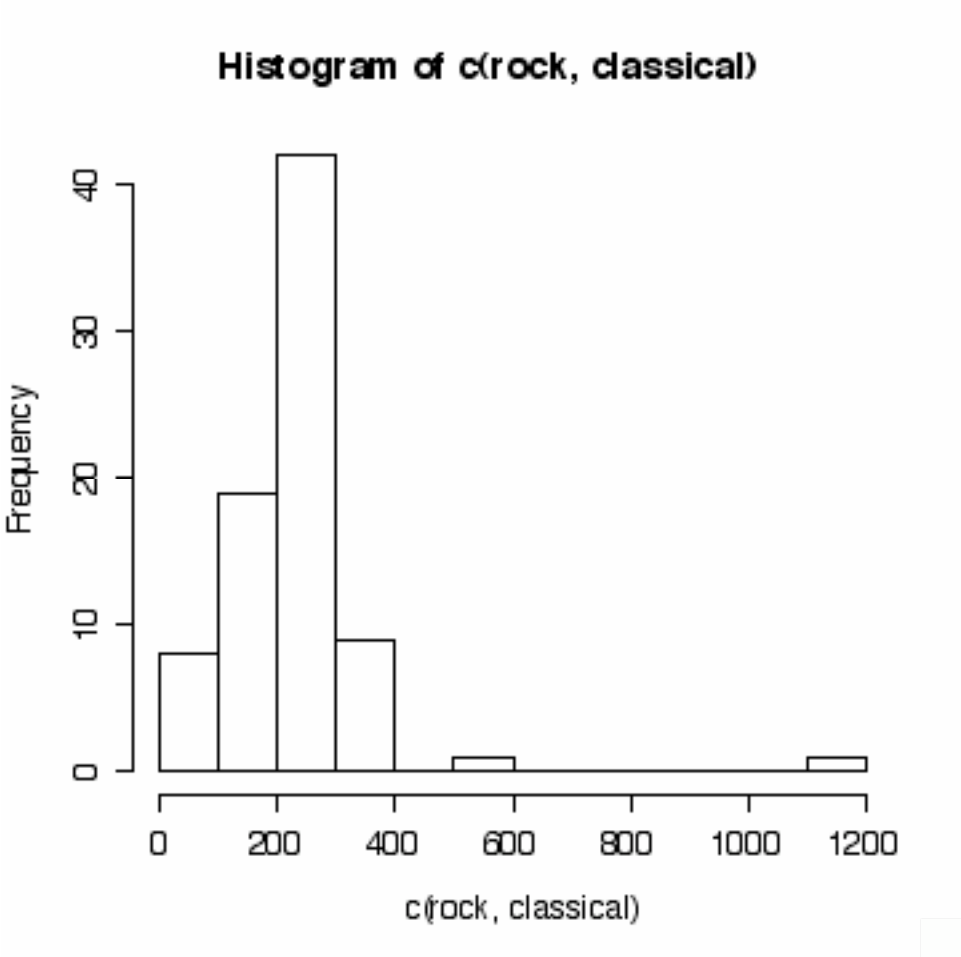
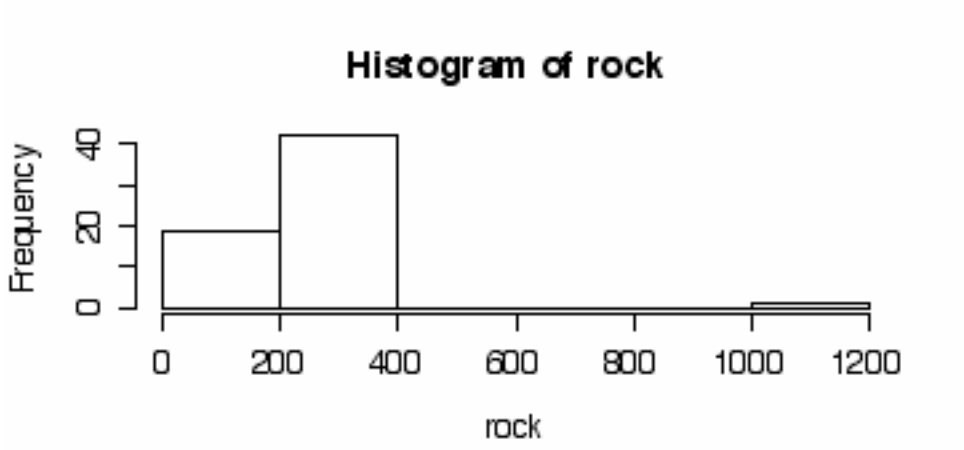
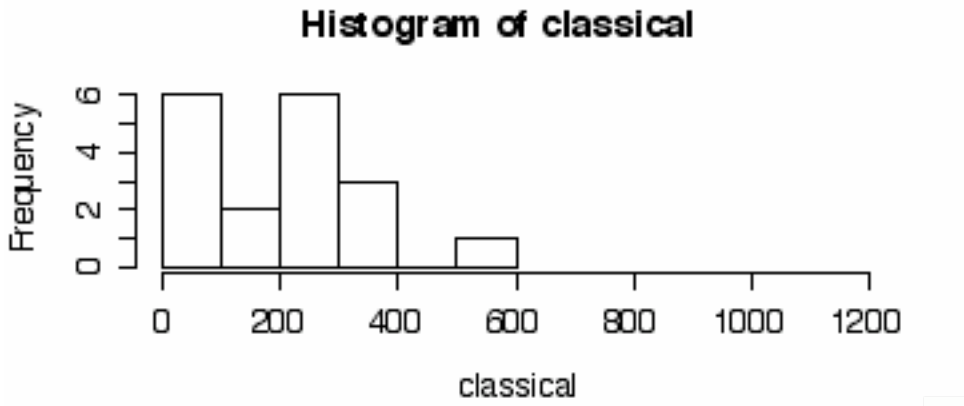
R-commands, Jan 19

```
> music <- read.table("songlist.txt", header=T, sep="\t")
> names(music)
[1] "name"        "artist"      "composer"    "album"
"genre"
[6] "size"        "time"        "tracknumber" "year"
> attach(music)
> rock <- time[genre=="Rock"]
> classical <- time[genre=="Classical"]
> hist(c(rock, classical))
```



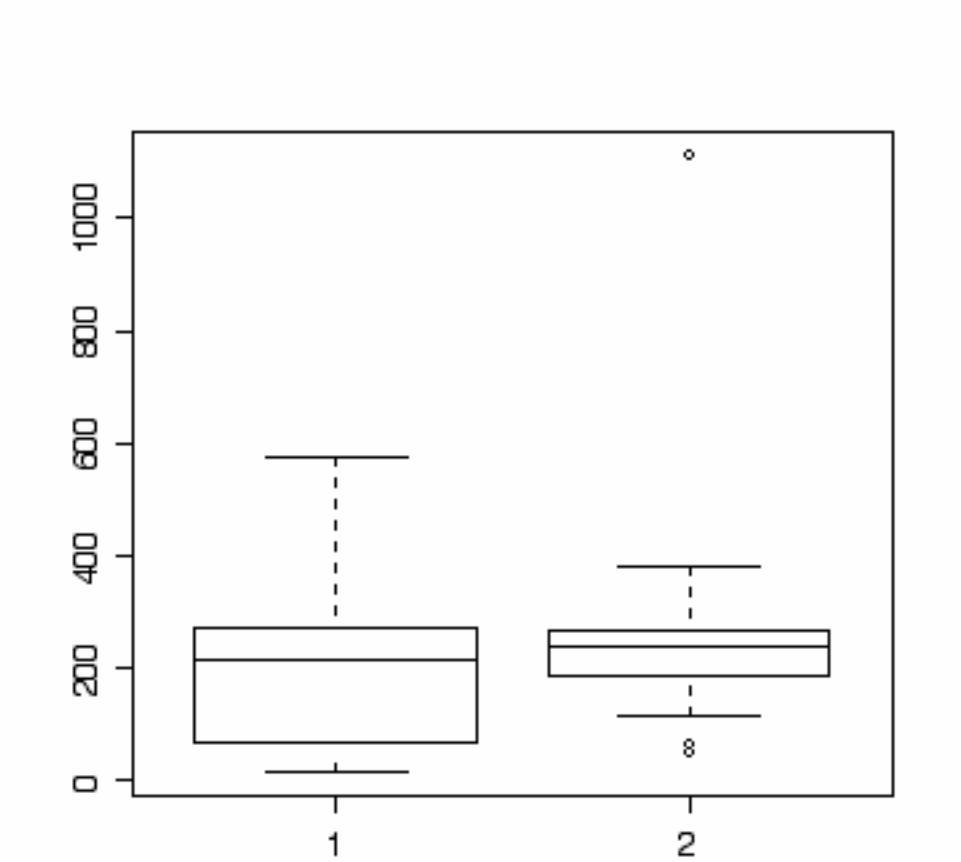

```
par(mfrow=c(2,1))
> hist(rock, xlim=c(0,1200))
> hist(classical, xlim=c(0,1200))
```






```
> summary(rock)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   48.0   187.0   239.0   241.5   266.0  1111.0
> sd(rock)
[1] 130.4381
> summary(classical)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  16.00   75.25  217.00  208.20  270.80  573.00
> sd(classical)
[1] 146.4334

boxplot(classical, rock)
par(mfrow=c(1,1))
> boxplot(classical, rock)
>
```




```
> mean(rock)-mean(classical)
[1] 33.28495

> t.test(classical, rock)

     Welch Two Sample t-test

data:  classical and rock
t = -0.8694, df = 25.359, p-value = 0.3928
alternative hypothesis: true difference in means is not
equal to 0
95 percent confidence interval:
 -112.07622   45.50633
sample estimates:
mean of x mean of y
 208.1667  241.4516
```

```
> t.test(classical, rock,var.equal=T)

     Two Sample t-test

data:  classical and rock
t = -0.9271, df = 78, p-value = 0.3567
alternative hypothesis: true difference in means is not
equal to 0
95 percent confidence interval:
 -104.75716   38.18727
sample estimates:
mean of x mean of y
 208.1667  241.4516

> outcome <- t.test(classical,rock)
> names(outcome)
[1] "statistic"   "parameter"   "p.value"     "conf.int"
"estimate"
[6] "null.value"  "alternative" "method"      "data.name"
> outcome$p.value
[1] 0.3927743
> outcome$conf.int
[1] -112.07622   45.50633
attr(,"conf.level")
[1] 0.95
```

Code to approximate (via simulations) a permutation test.

```
permtest <- function(x,y, reps){
     teststat <- c()
for (i in 1:reps){
     n1 <- length(x)
     n2 <- length(y)
     permute <- sample(c(x,y))
     groupa <- permute[1:n1]
     groupb <- permute[(n1+1): length(c(x,y))]
     diffmean <- mean(groupa) - mean(groupb)
     teststat <- c(teststat,diffmean)}
```

```
teststat}

> output <- permtest(rock,classical,1000)
>
> hist(output)
> mean(output)
[1] -1.274194
> sd(output)
[1] 35.70019
```