Lab6

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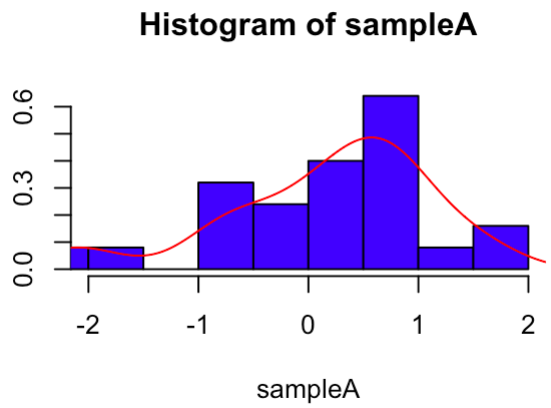
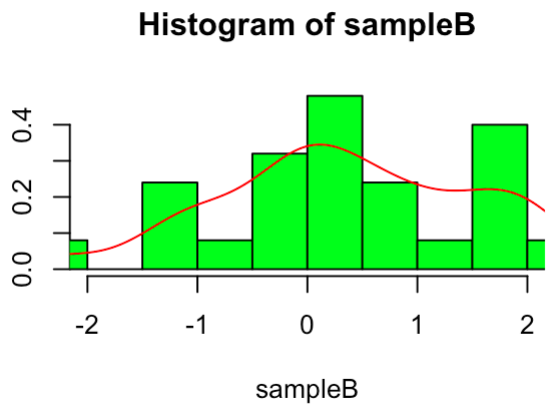
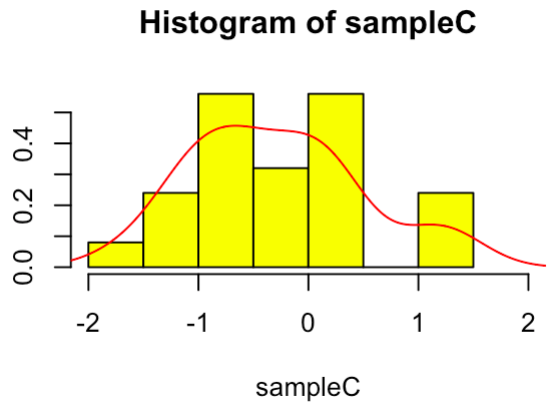
Part 1

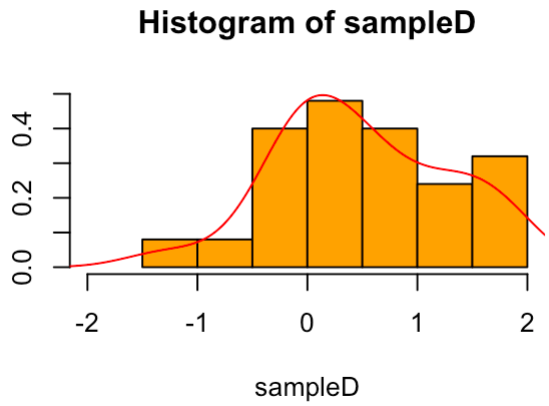
A.

```
library(MASS)
set.seed(1)
sampleA <- rnorm(25,mean=0,sd=1)
set.seed(2)
sampleB <- rnorm(25,mean=0,sd=1)
set.seed(3)
sampleC <- rnorm(25,mean=0,sd=1)
set.seed(4)
sampleD <- rnorm(25,mean=0,sd=1)
par(mfrow=c(2,2))
truehist(sampleA,col = "blue",main = "Histogram of sampleA",nbin=9,xlim = c(-2,2))
lines(density(sampleA),col="red")
truehist(sampleB,col = "green",main = "Histogram of sampleB",nbin=8,xlim = c(-2,2))
lines(density(sampleB),col="red")
truehist(sampleC,col = "yellow",main = "Histogram of sampleC",nbin=10,xlim = c(-2,2))
lines(density(sampleC),col="red")
truehist(sampleD,col = "orange",main = "Histogram of sampleD",ymax=0.5,nbin=8,xlim = c(-2,
2))
lines(density(sampleD),col="red")
```









B.

```
set.seed(123)
sampleE <- rnorm(100000,mean=150,sd=6)
min(sampleE)
```

```
## [1] 125.2075
```

```
median(sampleE)
```

```
## [1] 150.0057
```

```
mean(sampleE)
```

```
## [1] 150.0059
```

```
max(sampleE)
```

```
## [1] 175.9369
```

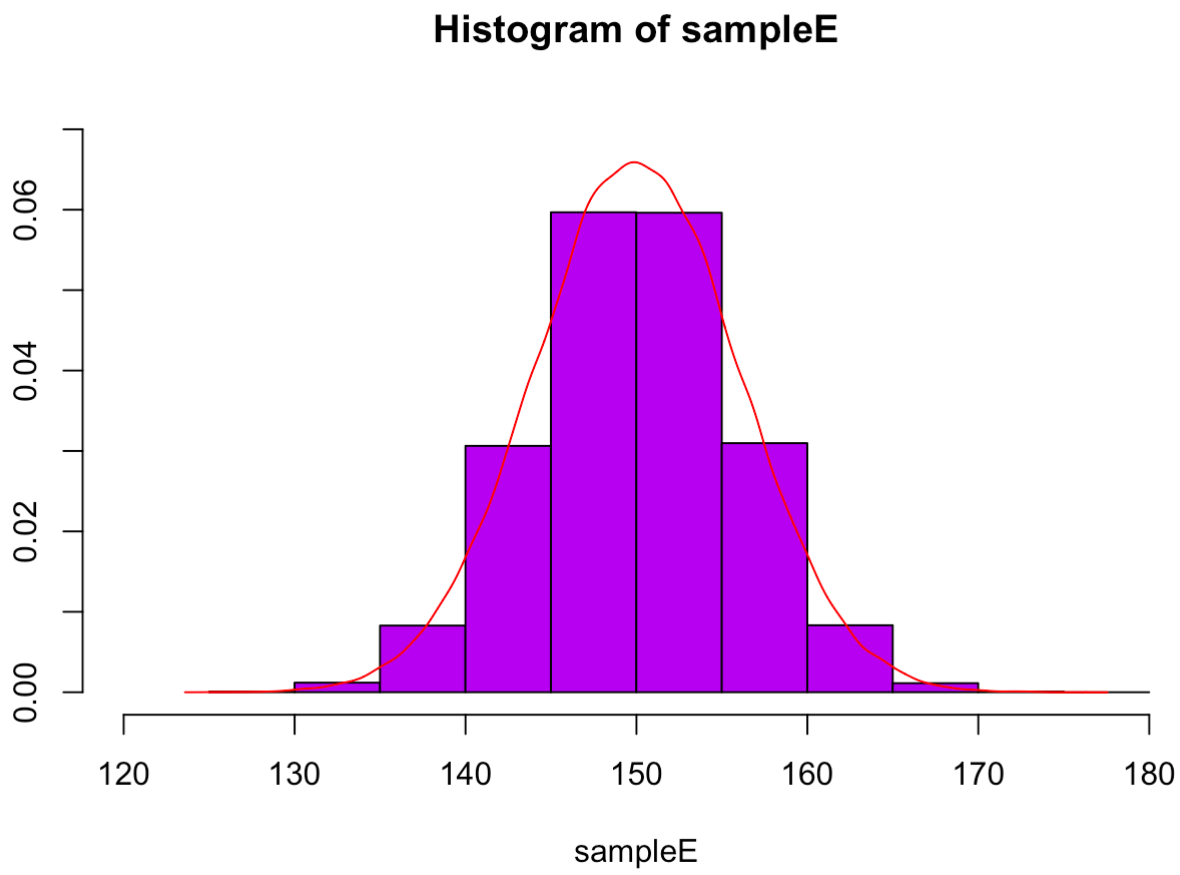
```
sd(sampleE)
```

```
## [1] 5.9984
```

```
IQR(sampleE)
```

```
## [1] 8.072623
```

```
par(mfrow=c(1,1))
truehist(sampleE,col = "purple",main = "Histogram of sampleE",nbin=8,ymax=0.07,xlim = c(12
180))
lines(density(sampleE),col="red")
```



Part 2

```
library(ggplot2)
set.seed(5551212)
d2 <- diamonds[sample(nrow(diamonds), 25),]
head(d2)
```

```
##       carat       cut color clarity depth table price    x    y    z
## 34497  0.32     Ideal     F    VVS1  61.7    55   867 4.38 4.43 2.72
## 25540  2.27   Premium     I     SI1  61.0    58 14362 8.42 8.40 5.19
## 42946  0.30 Very Good     F     SI2  63.5    57   506 4.25 4.22 2.69
## 40296  0.40     Ideal     G     VS1  62.8    56  1125 4.70 4.67 2.94
## 5907   0.90      Good     E     SI1  60.8    65  3933 6.14 6.17 3.74
## 25112  1.23     Ideal     D    VVS2  62.4    55 13653 6.87 6.82 4.27
```

A.

```
set.seed(123)
sampleUSArrests <- USArrests[sample(nrow(USArrests), 25),]
head(sampleUSArrests)
```

```
##              Murder Assault UrbanPop Rape
## Iowa            2.2      56       57 11.3
## Rhode Island    3.4     174       87  8.3
## Maryland       11.3     300       67 27.8
## Tennessee      13.2     188       59 26.9
## Utah            3.2     120       80 22.9
## Arizona         8.1     294       80 31.0
```

B.

```
set.seed(123)
sampleFunction <- function(x,y) {
  sampleF <- x[sample(nrow(x), y),]
  return (sampleF)
}
sampleFunction(USArrests,10)
```

```
##              Murder Assault UrbanPop Rape
## Iowa            2.2      56       57 11.3
## Rhode Island    3.4     174       87  8.3
## Maryland       11.3     300       67 27.8
## Tennessee      13.2     188       59 26.9
## Utah            3.2     120       80 22.9
## Arizona         8.1     294       80 31.0
## Mississippi    16.1     259       44 17.1
## Wisconsin       2.6      53       66 10.8
## Virginia        8.5     156       63 20.7
## Maine           2.1      83       51  7.8
```

Part 3

A.

```
set.seed(123)
a <- rnorm(10,mean=54,sd=25)
a
```

```
##  [1] 39.98811 48.24556 92.96771 55.76271 57.23219 96.87662 65.52291
##  [8] 22.37347 36.82868 42.85845
```

```
sort(a)
```

```
##  [1] 22.37347 36.82868 39.98811 42.85845 48.24556 55.76271 57.23219
##  [8] 65.52291 92.96771 96.87662
```

B.

```
b <- ChickWeight[order(ChickWeight$weight),]
head(b,n=50)
```

```
##     weight Time Chick Diet
## 196     35    2    18    1
## 26      39    2     3    1
## 195     39    0    18    1
## 293     39    0    27    2
## 305     39    0    28    2
## 317     39    0    29    2
## 365     39    0    33    3
## 401     39    0    36    3
## 543     39    0    48    4
## 13      40    0     2    1
## 221     40    0    21    2
## 269     40    0    25    2
## 519     40    0    46    4
## 555     40    0    49    4
## 49      41    0     5    1
## 61      41    0     6    1
## 73      41    0     7    1
## 108     41    0    10    1
## 132     41    0    12    1
## 144     41    0    13    1
## 156     41    0    14    1
## 168     41    0    15    1
## 176     41    0    16    1
## 209     41    0    20    1
## 233     41    0    22    2
## 353     41    0    32    3
## 377     41    0    34    3
## 389     41    0    35    3
## 413     41    0    37    3
## 425     41    0    38    3
## 449     41    0    40    3
## 507     41    0    45    4
## 531     41    0    47    4
## 567     41    0    50    4
## 1       42    0     1    1
## 37      42    0     4    1
## 50      42    2     5    1
## 85      42    0     8    1
## 96      42    0     9    1
## 183     42    0    17    1
## 257     42    0    24    2
## 281     42    0    26    2
## 329     42    0    30    2
## 341     42    0    31    3
## 437     42    0    39    3
## 461     42    0    41    4
## 473     42    0    42    4
## 485     42    0    43    4
## 497     42    0    44    4
## 25      43    0     3    1
```

I ordered ChickWeight's weight from the lowest to the highest

C.

```
c <- swiss[,order(names(swiss))]
head(c)
```

```
##              Agriculture Catholic Education Examination Fertility
## Courtelary          17.0     9.96        12          15      80.2
## Delemont            45.1    84.84         9           6      83.1
## Franches-Mnt        39.7    93.40         5           5      92.5
## Moutier             36.5    33.77         7          12      85.8
## Neuveville          43.5     5.16        15          17      76.9
## Porrentruy          35.3    90.57         7           9      76.1
##              Infant.Mortality
## Courtelary               22.2
## Delemont                 22.2
## Franches-Mnt             20.2
## Moutier                  20.3
## Neuveville               20.6
## Porrentruy               26.6
```

D.

```
table(diamonds$cut)
```

```
##
##      Fair      Good Very Good   Premium     Ideal
##      1610      4906     12082     13791     21551
```

```
sort(table(diamonds$cut))
```

```
##
##      Fair      Good Very Good   Premium     Ideal
##      1610      4906     12082     13791     21551
```

```
sort(table(diamonds$cut),decreasing = T)
```

```
##
##     Ideal   Premium Very Good      Good      Fair
##     21551     13791     12082      4906      1610
```