IST687_WK4_HM4

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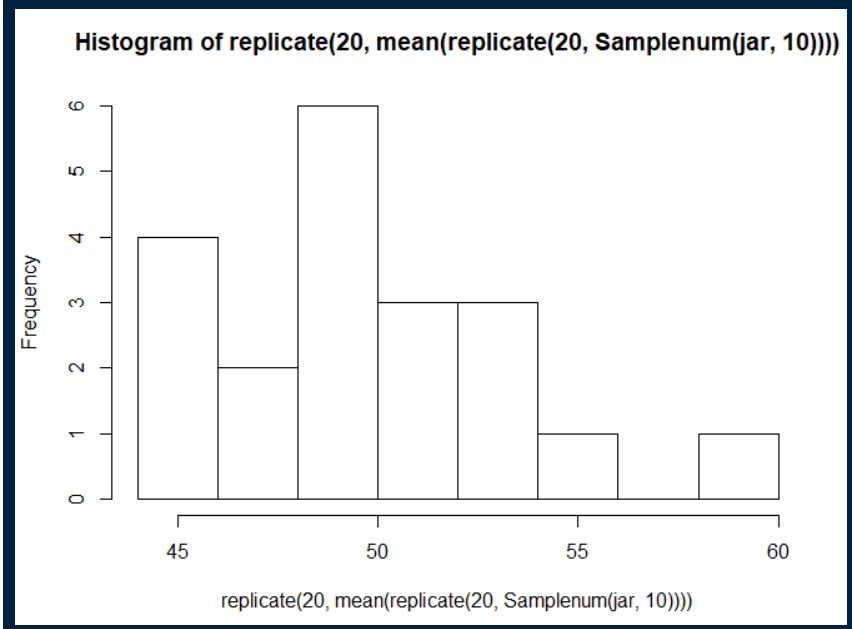
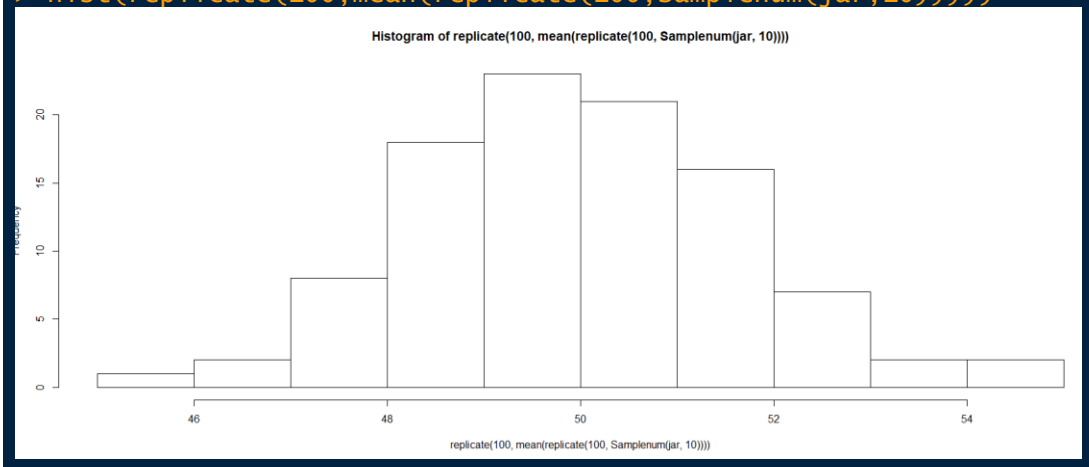
```
>
+ printVecInfo <- function(myVector)
+ {
> printVecInfo
> x <- myVector
> Mn <- mean(x)
> Md <- median(x)
> Mx <- max(x)
> Q1 <- quantile(x,0.05)
> Q2 <- quantile(x,0.95)
> Skw <- skewness(x)
> Central_Disp <- c(Mean=Mn,Median=Md,Min=Mim,Max=Mx,sd=stdv,Q1,Q2,Skewness=S
kw)
> return(Central_Disp)
> {
+ Myvector <- c(1,2,3,4,5,6,7,8,9,10,50)
+ Results <- printVecInfo(Myvector)
+ return(results)
+ results
+ }

> {
+ mean(Myvector)
+ median(Myvector)
+ min(Myvector)
+ max(Myvector)
+ sd(Myvector)
+ quantile(Myvector,(0.05))
+ quantile(Myvector,(0.95))
+ skewness(Myvector)
+ return
+ }
> printVecInfo <- function(myVector)
+ mean(Myvector)
> median(Myvector)
[1] 6
> mean(Myvector)
[1] 9.545455
> min(Myvector)
[1] 1
> max(Myvector)
[1] 50
> sd(Myvector)
[1] 13.72125
> quantile(Myvector,(0.05))
 5%
1.5
> quantile(Myvector,(0.95))
95%
 30
> skewness(Myvector)
[1] 2.620396
```

```
#Step2
> rm<- "red marbles"          #rm to redmarbles
> bm <- "blue marbles"        #bm to Blue Marbles
> v.rm <- replicate(50,rm)    # 50 red marbles
> v.bm <- replicate(50,bm)    # 50 Blue Marbles
> jar<-c(v.rm, v.bm)          # Storing them in a jar
> length(jar)                 # Finding Length of Jar
[1] 100

> length(jar[jar=="red marbles"])  #Findiing num of Red marbles
[1] 50

> newjar <- sample(jar,10,replace=TRUE)  # Creating a Sample of 10 Marbles
> length(newjar[newjar=="red marbles"])  # Num of red marbles in Jar
[1] 5
> length(newjar[newjar=="red marbles"])/length(newjar) # mean of Red marbles
[1] 0.5
> Samplenum<-function(jar,num)
+     {        # input a vector( jar) input size of sample( num )
+     mySample<-sample(jar,num,replace=TRUE) # Creating a function to find pe
rcent of red marbles
+     len<-length(mySample[mySample==rm])
+     AVG<-len/num*100
+     return(AVG)
+   }

> # Replicating 20 samples
> replicate(20,Samplenum(jar,10))
 [1] 70 30 70 70 50 20 50 40 30 60 40 40 40 50 40 60 80 60 40 40
> # finding mean
> mean(replicate(20,Samplenum(jar,10)))
[1] 49


> # replicationg 20 means
> replicate(20,mean(replicate(20,Samplenum(jar,10))))
 [1] 54.0 52.0 52.5 50.5 46.5 51.5 47.5 44.0 46.5 49.5 53.5 42.5 49.0 61.0
53.5 47.5 57.0 50.0 49.5 44.0
```



```
> printVecInfo <-replicate(20,mean(replicate(20,Samplenum(jar,10))))
> printVecInfo
 [1] 50.0 48.5 52.5 51.5 59.0 54.0 53.0 50.5 55.0 52.5 50.0 53.0 52.0 54.0 45
.0 51.0 53.5
[18] 46.5 48.5 51.0
> mean(printVecInfo)
[1] 51.55
> median(printVecInfo)
[1] 51.75
> min(printVecInfo)
[1] 45
> max(printVecInfo)
[1] 59
> sd(printVecInfo)
[1] 3.103055
> quantile(printVecInfo,(0.05))
    5%
46.425
> quantile(printVecInfo,(0.95))
 95%
55.2
> skewness(printVecInfo)
[1] 0.0430214


> # Replicating for 100
> replicate(100,Samplenum(jar,10))
  [1] 50 30 50 60 60 50 30 60 30 70 60 60 90 60 60 30 40 50 20 50 50 20 80 20
40 20 50 60
 [29] 40 40 50 60 70 50 70 40 50 40 50 20 50 50 20 60 60 30 50 70 30 70 80 40
80 70 40 70
 [57] 80 60 40 70 60 40 40 40 60 60 90 50 80 50 30 70 50 50 50 20 50 20 60 60
50 40 40 70
 [85] 30 50 50 60 60 30 50 60 40 40 20 40 70 70 30 80


> mean(replicate(100,Samplenum(jar,10)))
[1] 49.8
> replicate(100,mean(replicate(100,Samplenum(jar,10))))
  [1] 49.2 49.6 50.0 49.4 49.6 53.3 50.6 49.7 48.8 53.6 51.7 50.5 51.4 49.3
50.8 51.3 48.0 49.7 48.4
 [20] 51.5 53.0 49.8 49.0 51.0 50.1 51.1 51.2 48.4 49.1 50.5 52.6 47.4 50.9
49.1 48.5 48.7 50.4 50.0
 [39] 50.2 49.3 48.5 49.6 51.0 51.0 48.0 50.1 48.4 50.8 49.0 50.1 50.7 48.9
50.4 51.0 50.5 49.7 50.5
 [58] 50.0 48.1 52.5 51.2 48.7 51.9 51.8 49.6 50.8 50.8 46.3 50.0 47.9 51.4
50.7 49.3 47.5 49.2 50.0
 [77] 49.6 50.0 46.9 51.5 48.2 50.6 49.6 50.3 50.5 51.2 49.8 49.6 50.5 51.4
51.2 52.8 51.3 46.7 49.5
 [96] 52.2 50.3 52.7 48.5 50.6
```

```
> hist(replicate(100,mean(replicate(100,Samplenum(jar,10)))))
```




```
printVecInfo <- replicate(100,mean(replicate(100,Samplenum (jar,10))))
> printVecInfo
  [1] 52.3 49.9 48.8 52.9 48.5 50.3 53.2 50.4 48.8 46.5 51.1 50.3
 [13] 48.8 50.7 47.9 52.4 51.4 50.5 48.1 49.0 47.6 50.8 45.1 50.4
 [25] 49.3 46.5 51.0 50.2 52.8 50.8 48.6 48.9 47.8 48.0 50.4 48.8
 [37] 51.5 48.1 50.0 48.1 49.8 50.5 50.4 49.4 52.5 51.9 49.5 50.0
 [49] 48.2 48.1 49.3 48.0 51.5 50.2 51.2 51.1 50.3 49.0 47.9 53.3
 [61] 50.8 49.2 51.6 51.5 53.4 51.4 46.6 50.6 48.9 50.4 49.7 50.0
 [73] 52.8 52.8 50.5 48.3 47.3 50.8 48.4 48.7 50.2 49.6 47.4 48.9
 [85] 51.3 49.7 49.4 47.7 49.9 47.8 54.3 48.7 49.0 50.3 49.1 49.1
 [97] 48.1 49.9 51.1 50.1


> mean(printVecInfo)
[1] 49.839
> median(printVecInfo)
[1] 49.9
> min(printVecInfo)
[1] 45.1
> max(printVecInfo)
[1] 54.3
> sd(printVecInfo)
[1] 1.714106
> quantile(printVecInfo,(0.05))
    5%
47.395
> quantile(printVecInfo,(0.95))
   95%
52.805
> skewness(printVecInfo)
[1] 0.1220375
```

```
> # Replicating for 1000
> replicate(1000,Samplenum(jar,10))
   [1]  50  50  50  40  20  20  40  70  60  50  40  40  40  60  20
  [16]  60  40  60  60  50  60  60  40  60  30  40  50  80  50  80
  [31]  60  50  50  40  40  60  60  30  70  60  50  60  60  30  40
  [46]  40  40  50  30  60  50  60  40  70  50  40  30  30  40  40
  [61]  40  50  20  50  50  40  70  50  50  40  50  40  50  80  80
  [76]  50  50  30  30  60  50  50  40  60  60  50  70  60  20  50
  [91]  50  70  50  60  40  60  30  40  50  90  60  70  50  30  40
 [106]  40  70  40  10  60  60  50  40  30  30  50  90  40  50  60
 [121]  30  40  60  30  40  70  40  70  40  60  70  50  50  80  30
 [136]  60  70  50  50  40  60  70  60  70  70  50  20  10  60  40
```

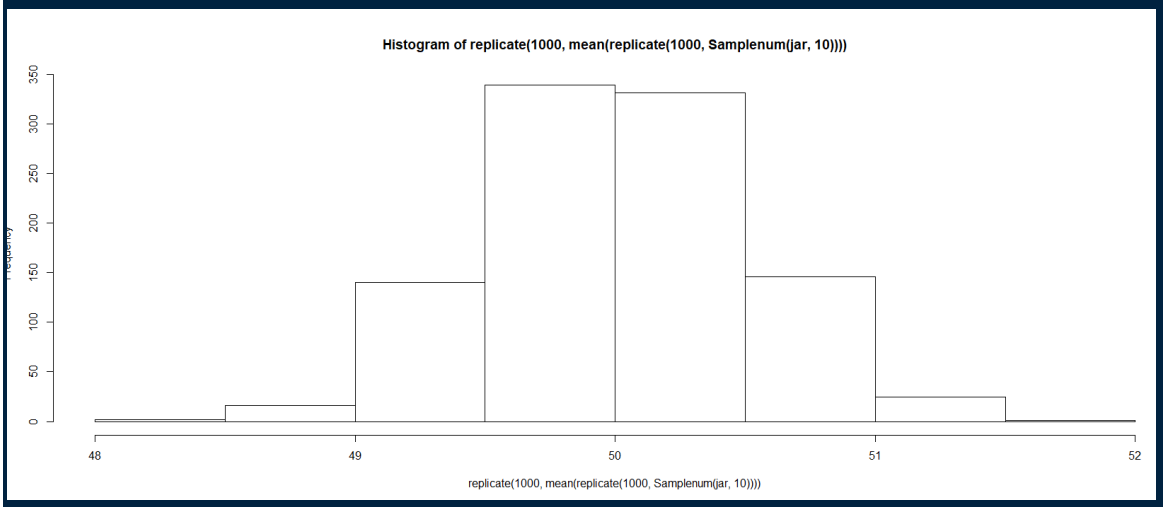
```
[151]  80  30  70  60  30  50  70  30  40  70  40  40  50  60  50
[166]  50  30  60  30  40  50  60  20  40  60  60  50  50  60  40
[181]  40  70  50  40  30  50  40  50  50  90  60  60  70  40  10
[196]  30  40  90  60  70  60  60  50  60  70  30  40  70  30  70
[211]  40  60  80  30  50  40  60  50  50  50  80  50  50  70  80
[226]  70  50  50  30  40  20  30  30  60  40  50  30  70  60  70
[241]  60  40  40  40  40  40  50  20  60  30  40  30  30  20  60
[256]  60  10  70  50  50  60  60  40  30  40  40  70  60  40  50
[271]  50  60  20  80  50  60  70  80  40  70  30  40  60  50  50
[286]  50  70  70  40  10  50  60  70  30  40  70  60  40  50  60
[301]  60  50  70  30  50  60  80  70  70  80  50  70  40  70  30
[316]  40  70  40  60  30  30  30  40  30  50  70  20  60  50  70
[331]  10  50  50  40  60  60  60  70  60  80  30  30  60  30  50
[346]  20  50  50  40  70  50  20  60  70  40  70  70  70  50  60
[361]  30  30  60  90  40  30  30  70  40  40  50  40  60  50  20
[376]  60  60  50  70  60  80  40  30  70  40  30  80  40  50  80
[391]  40  50  70  70  60  50  40  50  60  30  20  60  40  40  60
[406]  70  60  70  40  50  60  30  80  50  60  30  50  60  60  80
[421]  40  40  20  60  50  40  60  40  30  30  50  40  40  50  40
[436]  40  60  40  50  40  30  50  30  40  70  70  40  70  50  40
[451]  40  60  50  20  40  20  60  70  50  70  50  20  40  30  20
[466]  30  40  80  30  60  30  50  60  40  60  50  80  40  40  70
[481]  50  30  60  30  50  40  50  60  10  50  20  40  60  30  60
[496]  20  60  20  80  80  40  30  30  50  60  70  30  30  50  60
[511]  50  80  60  70  50  30  60  60  10  60  30  30  70  50  60
[526]  40  50  30  30  30  90  30  30  60  80  60  70  40  40  70
[541]  60  40  20  60  50  30  50  50  60  40  60  50  60  60  30
[556]  60  70  30  50  40  80  40  50  40  40  70  30  40  60  50
[571]  40  50  40  40  70  40  40  70  30  70  40  30  60  50  70
[586]  70  40  50  20  10  50  40  50  40  20  30  60  70  40  70
[601]  60  30  50  50  40  60  70  80  80  60  40  30  50  50  20
[616]  70  40  40  50  40  60  50  40  40  40  40  40  40  40  60
[631]  40  30  50  50  50  60  70  50  40  50  50  50  40  50  50
[646]  30  50  60  20  50  50  60  50  40  80  40  40  50  40  60
[661]  80  50  80  40  50  60  60  60  50  30  40  40  80  40  40
[676]  40  50  50  70  60  70  40  60  70  60  70  60  40  40  60
[691]  20  60  80  30  10  50  70  40  70  40  50  70  50  50  50
[706]  40  40  70  50  40  30  50  40  20  40  70  60  40  60  40
[721]  40  20  30  80  40  60  50  60  70  30  50  30  40  30  60
[736]  90  50  30  70  40  70  50  30  20  60  60  40  30  50  50
[751]  40  50  30  60  50  40  60  60  40  40  40  60  60  50  50
[766]  60  40  40  60  80  30  50  20  30  40  50  50  60  70  80
[781]  70  70  70  60  20  50  30  70  40  40  40  60  50  40  50
[796]  40  70  70   0  60  50  70  50  60  10  40  50  60  60  30
[811]  50  50  50  60  60  20  40  50  60  30  70  10  60  50  40
[826]  50  60  30  20  40  60  40  50  70  60  50  30  70  80  90
[841]  50  50  40  60  50  60  40  70  20  70  80  60  80  30  40
[856]  50  50  50  50  50  60  50  30  40  60  60  70  60  20  50
[871]  70  40  40  50  50  60  40  30  50  40  40  50  20  50  40
[886]  30  40  60  50  20  10  60  10  50  40  70  30  70  70  60
[901]  40  30  30  50  40  20  50  80  30  70  40  60  50  40  60
[916]  70  60  50  50  70  70  60  70  30  40  60  60  30  80  40
[931]  60  60  50  20  50  40  60 100  50  50  80  10  60  50  20
[946]  50  40  60  60  20  50  30  40  40  40  30  60  20  60  40
[961]  20  50  50  50  70  60  50  40  40  70  40  50  30  80  70
[976]  70  80  60  30  70  40  50  60  60  40  20  30  40  50  40
[991]  60  50  70  60  60  40  30  40  60  30
```

```
> mean(replicate(1000,Samplenum(jar,10)))
[1] 50.17

replicate(1000,mean(replicate(1000,Samplenum(jar,10))))
   [1] 50.31 49.90 49.79 49.89 49.16 49.49 50.07 50.69 49.89 50.29 49.77 50.7
4 49.57 50.23
  [15] 50.13 49.55 50.39 49.78 50.44 49.99 49.25 50.16 50.15 49.33 49.95 49.9
3 50.29 50.34
  [29] 49.56 49.01 50.31 49.79 50.17 50.15 49.51 49.31 50.17 49.75 49.39 50.4
4 49.44 49.96
  [43] 49.91 50.22 49.52 50.10 49.71 49.27 50.58 49.91 50.56 51.04 49.94 50.2
4 49.94 50.22
  [57] 50.95 49.85 49.94 49.97 50.32 51.08 49.71 50.25 49.93 50.37 49.24 49.7
2 49.89 50.41
  [71] 49.56 49.34 50.53 49.33 50.96 50.21 49.36 49.77 50.51 50.38 49.09 50.3
0 49.55 49.39
  [85] 50.38 49.78 49.05 49.93 50.80 49.43 49.53 50.61 49.66 50.32 48.94 49.4
6 50.29 50.16
  [99] 50.07 50.08 50.09 49.69 50.19 50.15 50.31 50.54 51.53 49.95 50.09 49.7
5 49.46 50.04
 [113] 50.91 50.04 50.20 49.23 49.42 49.53 49.82 50.53 49.77 49.93 50.20 49.2
5 50.30 49.90
 [127] 49.92 49.21 50.55 50.19 50.77 49.97 49.67 51.32 50.63 49.91 49.67 49.5
5 49.36 49.92
 [141] 50.36 50.70 50.19 49.81 50.67 49.70 50.21 49.88 50.30 49.64 48.78 49.2
8 50.52 48.55
 [155] 50.15 49.97 49.58 50.35 50.02 50.75 50.03 49.73 48.69 50.47 49.63 49.9
7 50.29 50.99
 [169] 49.83 49.71 49.47 50.01 49.16 49.89 50.80 50.54 49.20 49.64 48.83 49.5
7 49.64 49.78
 [183] 49.15 49.93 50.31 50.59 49.63 49.65 50.80 50.57 50.19 48.80 49.29 50.7
9 49.71 50.64
 [197] 49.23 49.52 50.43 49.09 49.93 49.30 51.07 49.80 49.58 49.92 49.89 49.2
3 50.42 49.88
 [211] 50.40 50.51 49.66 49.99 49.65 50.20 50.46 49.57 49.10 49.61 50.40 50.2
2 49.46 48.76
 [225] 49.45 49.31 49.48 49.96 49.46 50.04 50.01 50.04 50.72 49.79 50.20 49.9
4 50.26 49.76
 [239] 50.49 49.76 50.33 49.92 49.40 49.56 48.91 49.98 50.55 50.27 50.46 49.4
3 50.30 50.12
 [253] 50.38 50.77 49.81 49.35 50.22 50.87 50.04 50.09 49.52 50.98 49.27 49.5
0 49.13 50.50
 [267] 50.11 49.23 50.97 50.70 49.59 51.41 50.15 49.46 50.30 49.84 50.20 50.1
4 50.58 49.84
 [281] 50.06 49.94 49.75 50.26 51.12 49.95 49.43 49.96 49.91 50.29 50.19 49.6
4 50.57 50.37
 [295] 50.14 50.23 49.19 51.26 49.72 50.03 49.31 50.93 50.16 49.90 49.79 50.1
9 50.47 50.30
 [309] 50.19 50.73 49.02 49.46 51.52 50.49 50.05 49.30 51.02 49.80 51.10 49.8
8 50.32 49.90
 [323] 49.87 50.17 51.52 49.63 50.16 49.42 50.39 50.83 50.08 49.63 50.53 49.4
0 50.05 49.51
 [337] 49.67 49.20 49.90 50.35 50.55 50.26 49.91 50.12 48.69 49.51 50.26 49.4
1 49.62 50.58
 [351] 49.64 50.12 50.43 50.98 50.18 50.27 49.97 50.20 48.93 49.41 50.45 50.6
4 50.07 50.31
 [365] 50.64 49.30 50.47 50.64 50.28 50.06 50.28 50.45 50.08 50.34 50.57 50.0
7 49.61 50.46
 [379] 50.07 50.18 50.03 48.89 50.28 49.38 49.30 50.18 49.90 49.65 49.94 49.8
3 49.67 49.63
 [393] 49.98 51.10 49.80 49.05 50.55 49.80 51.44 49.90 49.76 49.67 49.59 50.4
8 49.92 50.12
 [407] 49.41 50.05 50.14 50.08 48.82 49.57 49.93 49.91 49.70 50.03 50.52 50.7
7 49.76 50.44
```

```
 [421] 50.00 49.40 49.46 50.02 49.64 50.21 50.09 49.93 50.64 49.57 50.14 49.1
1 49.54 50.81
 [435] 51.51 49.83 49.27 50.41 49.76 49.48 49.32 48.92 49.79 49.94 50.97 50.1
6 50.30 50.69
 [449] 50.76 49.51 50.59 49.47 49.36 49.85 49.62 49.91 50.04 50.06 50.05 49.9
9 49.32 50.38
 [463] 49.62 48.86 49.45 50.48 50.21 50.26 49.18 50.57 50.11 50.43 49.62 49.7
5 49.97 50.72
 [477] 49.77 50.13 50.75 49.24 51.08 50.31 49.57 49.83 49.25 49.22 50.58 49.6
7 49.62 49.89
 [491] 49.56 50.25 50.14 49.80 49.58 49.28 49.60 49.56 50.95 49.33 50.05 50.6
8 50.24 49.82
 [505] 49.91 50.50 49.43 50.52 48.86 50.77 49.50 49.82 50.60 50.07 50.39 49.9
3 49.90 50.54
 [519] 50.05 49.60 49.60 50.73 49.94 49.24 50.17 50.71 50.05 50.51 50.62 50.5
5 49.83 50.31
 [533] 50.44 50.45 49.73 50.79 50.53 51.09 50.63 49.89 50.27 50.86 49.93 48.9
3 50.82 49.25
 [547] 50.78 49.30 50.58 50.04 49.44 51.00 49.61 49.80 49.53 51.14 50.88 50.3
6 50.89 50.13
 [561] 51.34 50.23 49.79 49.69 50.07 50.41 49.84 50.46 49.99 50.13 49.02 49.3
1 51.10 50.19
 [575] 49.93 49.67 49.84 50.23 50.07 49.62 49.95 50.24 49.03 49.81 50.99 49.9
9 50.12 49.79
 [589] 50.13 50.15 50.21 50.34 50.72 51.00 49.54 49.85 49.75 49.87 49.60 50.0
4 49.94 49.97
 [603] 50.60 48.22 48.87 50.02 50.57 50.13 49.71 50.38 50.49 50.04 50.37 48.9
3 50.25 49.52
 [617] 50.33 49.71 51.32 50.41 49.51 50.13 50.31 50.37 49.71 50.80 48.84 50.3
4 49.28 51.17
 [631] 50.14 50.81 50.28 49.52 49.49 49.07 50.54 49.02 50.46 50.18 49.90 49.5
1 49.53 49.42
 [645] 50.08 49.79 49.34 49.04 49.94 50.00 50.25 50.18 50.68 50.37 50.80 50.3
4 48.98 49.84
 [659] 49.94 50.40 50.50 50.44 49.47 50.52 50.37 50.13 49.85 50.65 49.31 50.2
7 49.89 49.96
 [673] 50.34 49.56 50.17 49.66 49.49 50.15 49.64 49.99 49.70 50.35 50.62 51.3
5 49.40 48.94
 [687] 49.42 49.68 49.82 49.67 50.65 49.54 49.25 49.50 50.25 49.96 49.61 50.0
4 49.87 50.47
 [701] 50.32 50.38 50.11 49.78 50.12 50.05 50.45 50.77 50.02 50.18 49.78 50.0
4 50.35 48.74
 [715] 49.77 50.31 49.15 50.27 50.48 50.46 49.45 50.17 49.37 50.63 50.13 49.0
4 50.49 49.94
 [729] 50.85 50.13 49.98 50.99 50.18 50.22 50.25 50.05 49.77 50.43 49.60 49.9
5 49.89 50.64
 [743] 50.54 50.05 49.33 50.92 49.91 50.62 49.83 49.32 50.35 49.69 50.47 49.7
1 49.78 49.32
 [757] 49.77 49.80 49.92 50.35 49.76 49.90 49.73 49.90 50.17 49.76 48.95 50.3
9 50.13 49.50
 [771] 48.85 49.75 49.90 49.74 50.04 50.09 49.73 50.22 49.22 49.37 50.29 50.1
5 49.62 49.60
 [785] 50.37 49.40 50.27 50.31 50.82 50.44 49.83 50.21 49.68 50.18 50.52 50.5
7 50.30 49.09
 [799] 50.43 49.36 49.68 50.62 50.88 49.44 49.81 49.75 50.14 50.02 48.77 49.8
0 49.62 50.15
 [813] 49.44 50.24 50.26 50.30 49.88 49.79 50.42 49.19 49.73 50.06 50.16 49.7
2 50.75 50.01
 [827] 50.05 48.72 49.88 49.29 49.98 49.84 50.28 49.90 50.42 49.84 49.44 50.5
6 50.16 49.91
 [841] 49.46 49.74 50.29 50.50 49.38 50.75 50.29 50.25 49.47 49.80 50.07 49.7
0 49.82 49.88
 [855] 49.82 50.14 49.54 50.01 50.20 49.81 50.27 50.48 50.37 50.59 49.33 50.2
7 50.12 50.42
```

```
 [869] 49.72 49.72 50.37 50.46 49.67 48.83 50.77 50.67 49.81 49.65 50.21 49.4
5 49.65 50.23
 [883] 49.73 50.27 50.14 49.01 49.27 49.57 49.69 51.09 49.75 50.66 50.11 50.2
7 50.00 50.15
 [897] 49.85 49.84 51.50 49.78 50.40 49.45 50.03 50.25 49.28 49.77 49.44 50.0
1 49.39 49.92
 [911] 50.31 50.16 49.58 49.64 50.02 49.96 49.53 50.91 49.76 51.03 49.52 50.1
8 49.28 49.23
 [925] 50.36 49.53 49.87 50.44 50.03 49.27 51.18 49.52 49.40 50.88 49.46 50.2
6 49.64 49.99
 [939] 49.71 50.35 50.02 49.36 50.43 49.65 50.19 49.05 49.96 49.74 49.94 49.4
7 49.84 50.59
 [953] 49.80 50.55 50.07 50.18 50.74 50.51 49.56 49.70 49.68 49.41 50.08 50.6
9 50.55 50.05
 [967] 50.55 50.28 50.10 49.89 49.07 49.68 49.60 49.76 50.06 49.54 51.18 50.1
3 49.50 50.23
 [981] 50.17 50.11 50.50 50.23 50.04 50.26 50.29 49.42 49.92 50.32 50.09 48.9
7 50.65 49.82
 [995] 50.37 49.76 50.76 50.28 50.27 49.89
```

```
hist(replicate(1000,mean(replicate(1000,Samplenum(jar,10)))))
```

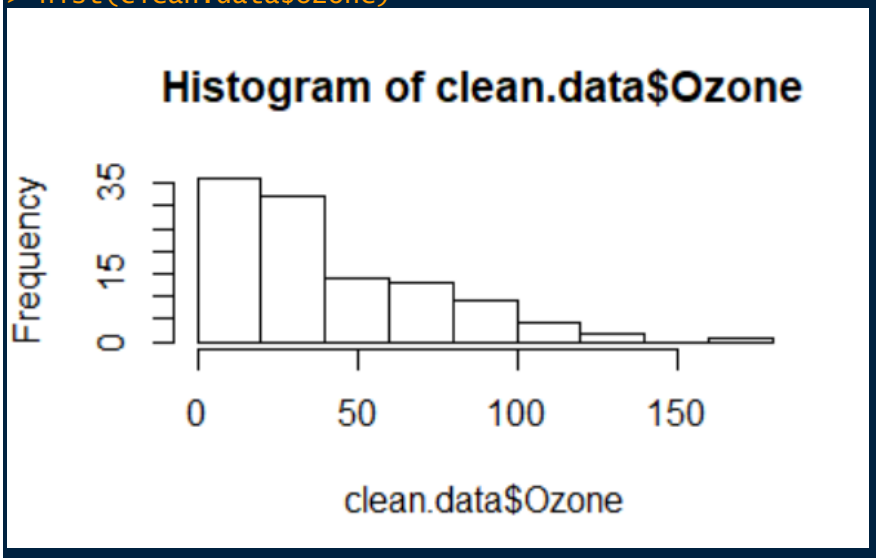



```
> printVecInfo <- replicate(1000,mean(replicate(1000,Samplenum(jar,10))))
> mean(printVecInfo)
[1] 50.01264
> median(printVecInfo)
[1] 50.01
> min(printVecInfo)
[1] 48.56
> max(printVecInfo)
[1] 51.54
> sd(printVecInfo)
[1] 0.4878032
> quantile(printVecInfo,(0.05))
     5%
49.2495
> quantile(printVecInfo,(0.95))
  95%
50.81


> skewness(printVecInfo)
```

```
[1] 0.05456476


datacleansing <- airquality
> clean.data <- na.omit(datacleansing) #Omiting Na's
> clean.data
    Ozone Solar.R Wind Temp Month Day
1      41     190  7.4   67     5   1
2      36     118  8.0   72     5   2
3      12     149 12.6   74     5   3
4      18     313 11.5   62     5   4
7      23     299  8.6   65     5   7
8      19      99 13.8   59     5   8
9       8      19 20.1   61     5   9
12     16     256  9.7   69     5  12
13     11     290  9.2   66     5  13
14     14     274 10.9   68     5  14
15     18      65 13.2   58     5  15
16     14     334 11.5   64     5  16
17     34     307 12.0   66     5  17
18      6      78 18.4   57     5  18
19     30     322 11.5   68     5  19
20     11      44  9.7   62     5  20
21      1       8  9.7   59     5  21
22     11     320 16.6   73     5  22
23      4      25  9.7   61     5  23
24     32      92 12.0   61     5  24
28     23      13 12.0   67     5  28
29     45     252 14.9   81     5  29
30    115     223  5.7   79     5  30
31     37     279  7.4   76     5  31
38     29     127  9.7   82     6   7
40     71     291 13.8   90     6   9
41     39     323 11.5   87     6  10
44     23     148  8.0   82     6  13
47     21     191 14.9   77     6  16
48     37     284 20.7   72     6  17
49     20      37  9.2   65     6  18
50     12     120 11.5   73     6  19
51     13     137 10.3   76     6  20
62    135     269  4.1   84     7   1
63     49     248  9.2   85     7   2
64     32     236  9.2   81     7   3
66     64     175  4.6   83     7   5
67     40     314 10.9   83     7   6
68     77     276  5.1   88     7   7
69     97     267  6.3   92     7   8
70     97     272  5.7   92     7   9
71     85     175  7.4   89     7  10
73     10     264 14.3   73     7  12
74     27     175 14.9   81     7  13
76      7      48 14.3   80     7  15
77     48     260  6.9   81     7  16
78     35     274 10.3   82     7  17
79     61     285  6.3   84     7  18
80     79     187  5.1   87     7  19
81     63     220 11.5   85     7  20
82     16       7  6.9   74     7  21
85     80     294  8.6   86     7  24
86    108     223  8.0   85     7  25
87     20      81  8.6   82     7  26
88     52      82 12.0   86     7  27
89     82     213  7.4   88     7  28
90     50     275  7.4   86     7  29
```

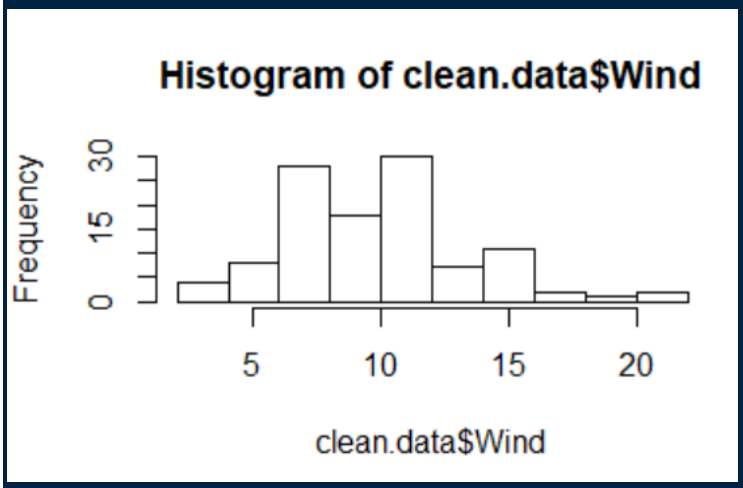
```
91      64      253   7.4    83      7   30
92      59      254   9.2    81      7   31
93      39       83   6.9    81      8    1
94       9       24  13.8    81      8    2
95      16       77   7.4    82      8    3
99     122      255   4.0    89      8    7
100     89      229  10.3    90      8    8
101    110      207   8.0    90      8    9
104     44      192  11.5    86      8   12
105     28      273  11.5    82      8   13
106     65      157   9.7    80      8   14
108     22       71  10.3    77      8   16
109     59       51   6.3    79      8   17
110     23      115   7.4    76      8   18
111     31      244  10.9    78      8   19
112     44      190  10.3    78      8   20
113     21      259  15.5    77      8   21
114      9       36  14.3    72      8   22
116     45      212   9.7    79      8   24
117    168      238   3.4    81      8   25
118     73      215   8.0    86      8   26
120     76      203   9.7    97      8   28
121    118      225   2.3    94      8   29
122     84      237   6.3    96      8   30
123     85      188   6.3    94      8   31
124     96      167   6.9    91      9    1
125     78      197   5.1    92      9    2
126     73      183   2.8    93      9    3
127     91      189   4.6    93      9    4
128     47       95   7.4    87      9    5
129     32       92  15.5    84      9    6
130     20      252  10.9    80      9    7
131     23      220  10.3    78      9    8
132     21      230  10.9    75      9    9
133     24      259   9.7    73      9   10
134     44      236  14.9    81      9   11
135     21      259  15.5    76      9   12
136     28      238   6.3    77      9   13
137      9       24  10.9    71      9   14
138     13      112  11.5    71      9   15
139     46      237   6.9    78      9   16
140     18      224  13.8    67      9   17
141     13       27  10.3    76      9   18
142     24      238  10.3    68      9   19
143     16      201   8.0    82      9   20
144     13      238  12.6    64      9   21
145     23       14   9.2    71      9   22
146     36      139  10.3    81      9   23
147      7       49  10.3    69      9   24
148     14       20  16.6    63      9   25
149     30      193   6.9    70      9   26
151     14      191  14.3    75      9   28
152     18      131   8.0    76      9   29
153     20      223  11.5    68      9   30

> printVecInfo <- clean.data$Ozone #using printvecinfo
```

```
> printVecInfo
  [1]  41  36  12  18  23  19   8  16  11  14  18  14  34   6  30  11   1  11
4  32  23
 [22]  45 115  37  29  71  39  23  21  37  20  12  13 135  49  32  64  40  77
97  97  85
 [43]  10  27   7  48  35  61  79  63  16  80 108  20  52  82  50  64  59  39
9  16 122
 [64]  89 110  44  28  65  22  59  23  31  44  21   9  45 168  73  76 118  84
85  96  78
 [85]  73  91  47  32  20  23  21  24  44  21  28   9  13  46  18  13  24  16
13  23  36
[106]   7  14  30  14  18  20

> mean(printVecInfo)
[1] 42.0991
> mean(printVecInfo)
[1] 42.0991
> median(printVecInfo)
[1] 31
> min(printVecInfo)
[1] 1
> max(printVecInfo)
[1] 168
> sd(printVecInfo)
[1] 33.27597
> quantile(printVecInfo,(0.05))
 5%
8.5
> quantile(printVecInfo,(0.95))
95%
109
> skewness(printVecInfo)
[1] 1.248104

> hist(clean.data$Ozone)
```




```
> printVecInfo <- clean.data$Wind
> printVecInfo
  [1]  7.4  8.0 12.6 11.5  8.6 13.8 20.1  9.7  9.2 10.9 13.2 11.5 12.0 18.4 1
1.5  9.7  9.7
 [18] 16.6  9.7 12.0 12.0 14.9  5.7  7.4  9.7 13.8 11.5  8.0 14.9 20.7  9.2 1
1.5 10.3  4.1
```

```
 [35]  9.2  9.2  4.6 10.9  5.1  6.3  5.7  7.4 14.3 14.9 14.3  6.9 10.3  6.3
5.1 11.5  6.9
 [52]  8.6  8.0  8.6 12.0  7.4  7.4  7.4  9.2  6.9 13.8  7.4  4.0 10.3  8.0 1
1.5 11.5  9.7
 [69] 10.3  6.3  7.4 10.9 10.3 15.5 14.3  9.7  3.4  8.0  9.7  2.3  6.3  6.3
6.9  5.1  2.8
 [86]  4.6  7.4 15.5 10.9 10.3 10.9  9.7 14.9 15.5  6.3 10.9 11.5  6.9 13.8 1
0.3 10.3  8.0
[103] 12.6  9.2 10.3 10.3 16.6  6.9 14.3  8.0 11.5
> mean(printVecInfo)
[1] 9.93964
> median(printVecInfo)
[1] 9.7
> min(printVecInfo)
[1] 2.3
> max(printVecInfo)
[1] 20.7
> sd(printVecInfo)
[1] 3.557713
> quantile(printVecInfo,(0.05))
 5%
4.6
> quantile(printVecInfo,(0.95))
 95%
15.5
> skewness(printVecInfo)
[1] 0.4556414
```




```
> printVecInfo <- clean.data$Temp
> printVecInfo
  [1] 67 72 74 62 65 59 61 69 66 68 58 64 66 57 68 62 59 73 61 61 67 81 79 76
82 90 87 82
 [29] 77 72 65 73 76 84 85 81 83 83 88 92 92 89 73 81 80 81 82 84 87 85 74 86
85 82 86 88
 [57] 86 83 81 81 81 82 89 90 90 86 82 80 77 79 76 78 78 77 72 79 81 86 97 94
96 94 91 92
 [85] 93 93 87 84 80 78 75 73 81 76 77 71 71 78 67 76 68 82 64 71 81 69 63 70
75 76 68
```

```
> mean(printVecInfo)
```

```
[1] 77.79279
> median(printVecInfo)
[1] 79
> min(printVecInfo)
[1] 57
> max(printVecInfo)
[1] 97
> sd(printVecInfo)
[1] 9.529969
> quantile(printVecInfo,(0.05))
5%
61
> quantile(printVecInfo,(0.95))
 95%
92.5
> skewness(printVecInfo)
[1] -0.2250959
> hist(clean.data$Temp)
```