HW3_Akers_Kevin

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Problem 4

The key takeaway for me was that each organization will have its own style guidelines and that you have to adapt to them after joining a particular organization.

Problem 5

The only real problem noted in the lint output was that I need to make sure to use correct spacing, especially after a comma.

Problem 6

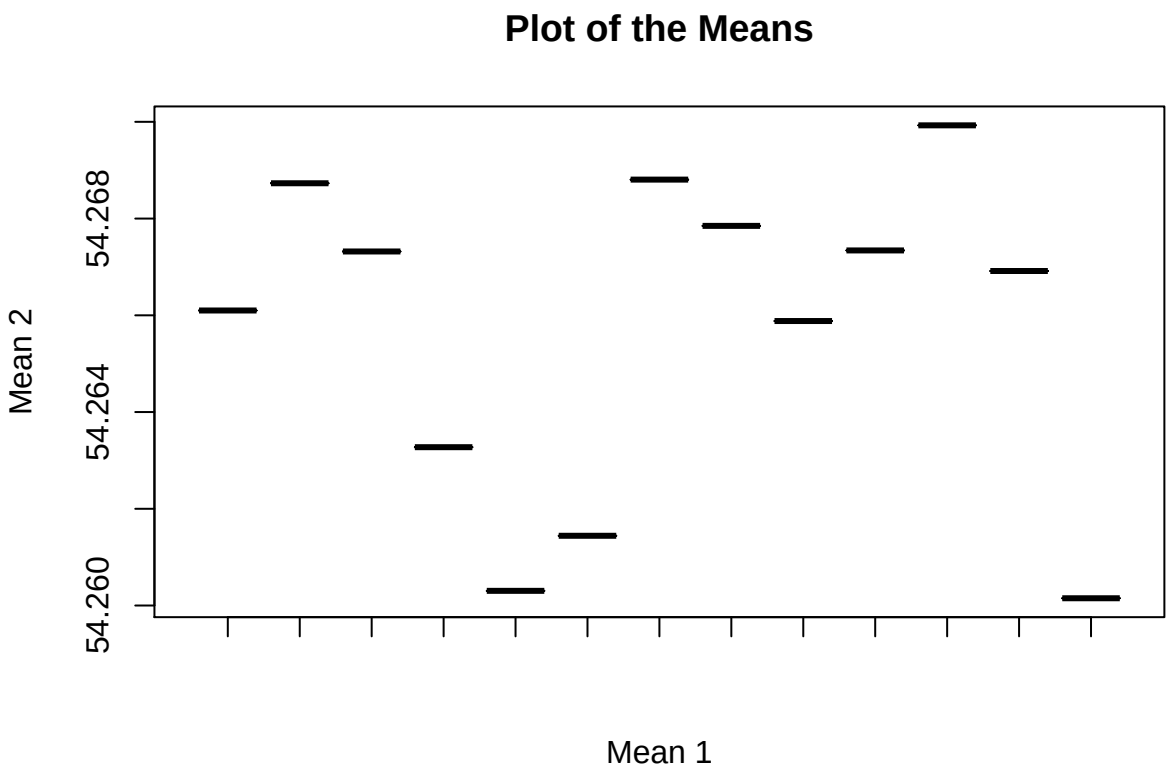
```
HW3_data <- readRDS("~/Desktop/STAT 5014/STAT_5015_homework_/03_good_programming_R_functions/HW3_data.r
summary <- function(dev1, dev2) {
    av <- c(mean(dev1), mean(dev2))
    deviation <- c(sd(dev1), sd(dev2))
    corr <- c(cor(dev1, dev2), cor(dev2, dev1))
    summary <- data.frame(av, deviation, corr)
}
for(i in 1:13){
  print(summary(filter(HW3_data, Observer == i)[, "dev1"], filter(HW3_data, Observer == i)[, "dev2"]))
}
```

```
##         av deviation        corr
## 1 54.26610  16.76982 -0.06412835
## 2 47.83472  26.93974 -0.06412835
##         av deviation        corr
## 1 54.26873  16.76924 -0.06858639
## 2 47.83082  26.93573 -0.06858639
##         av deviation        corr
## 1 54.26732  16.76001 -0.06834336
## 2 47.83772  26.93004 -0.06834336
##         av deviation        corr
## 1 54.26327  16.76514 -0.06447185
## 2 47.83225  26.93540 -0.06447185
##         av deviation        corr
## 1 54.26030  16.76774 -0.06034144
## 2 47.83983  26.93019 -0.06034144
##         av deviation        corr
## 1 54.26144  16.76590 -0.06171484
## 2 47.83025  26.93988 -0.06171484
##         av deviation        corr
## 1 54.26881   16.7667 -0.06850422
## 2 47.83545   26.9400 -0.06850422
##         av deviation        corr
```

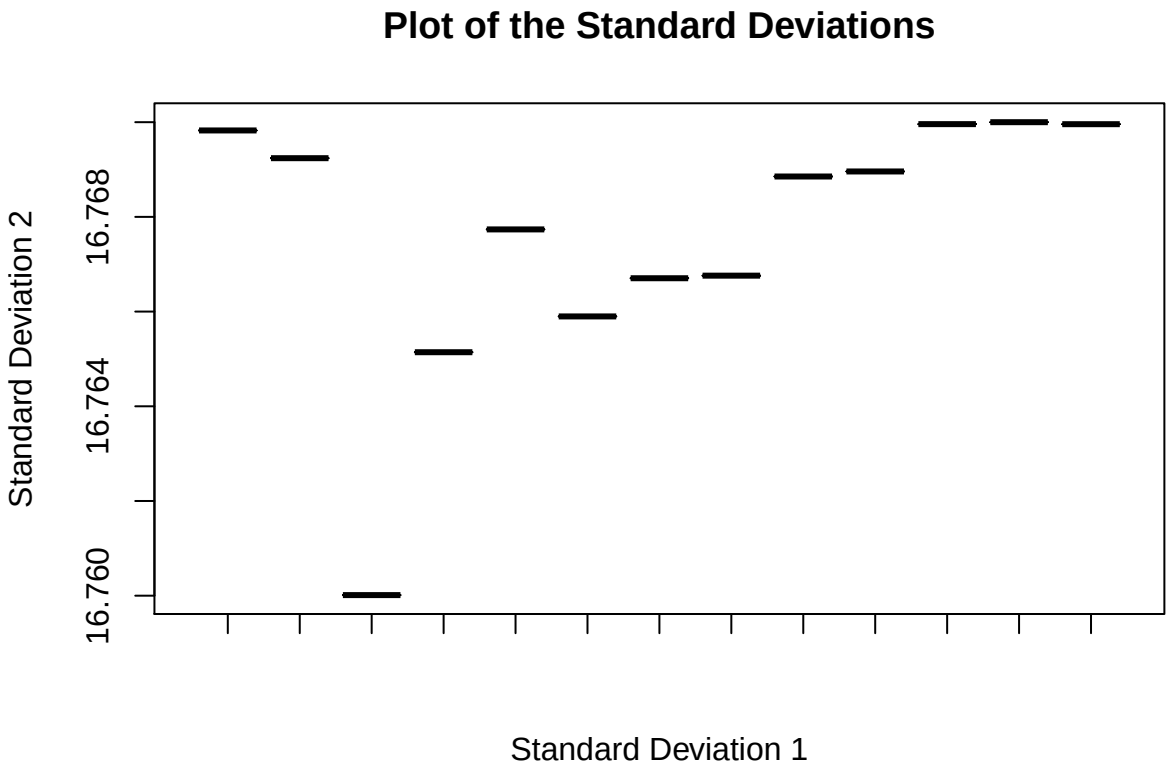
```
## 1 54.26785  16.76676 -0.06897974
## 2 47.83590  26.93610 -0.06897974
##         av deviation        corr
## 1 54.26588  16.76885 -0.06860921
## 2 47.83150  26.93861 -0.06860921
##         av deviation       corr
## 1 54.26734  16.76896 -0.0629611
## 2 47.83955  26.93027 -0.0629611
##         av deviation        corr
## 1 54.26993  16.76996 -0.06944557
## 2 47.83699  26.93768 -0.06944557
##         av deviation        corr
## 1 54.26692   16.7700 -0.06657523
## 2 47.83160   26.9379 -0.06657523
##         av deviation        corr
## 1 54.26015  16.76996 -0.06558334
## 2 47.83972  26.93000 -0.06558334
```

The table above shows the means, standard deviations, and correlations for dev1 and dev2 for all thirteen observers. Now we will produce the plots of the means and standard deviations, respectively.

```
mean1 <- data.frame( )
mean2 <- data.frame( )
sd1 <- data.frame( )
sd2 <- data.frame( )
for(i in 1:13){
  mean_dev1 <- mean(filter(HW3_data, Observer == i)[, "dev1"])
  mean_dev2 <- mean(filter(HW3_data, Observer == i)[, "dev2"])
  sd_dev1 <- sd(filter(HW3_data, Observer == i)[, "dev1"])
  sd_dev2 <- sd(filter(HW3_data, Observer == i)[, "dev2"])
  mean1 <- append(mean1, mean_dev1)
  mean2 <- append(mean2, mean_dev2)
  sd1 <- append(sd1, sd_dev1)
  sd2 <- append(sd2, sd_dev2)
}
boxplot(mean1, mean2, xlab = "Mean 1", ylab = "Mean 2", main = "Plot of the Means")
```




```
boxplot(sd1, sd2, xlab = "Standard Deviation 1", ylab = "Standard Deviation 2", main = "Plot of the Sta
```



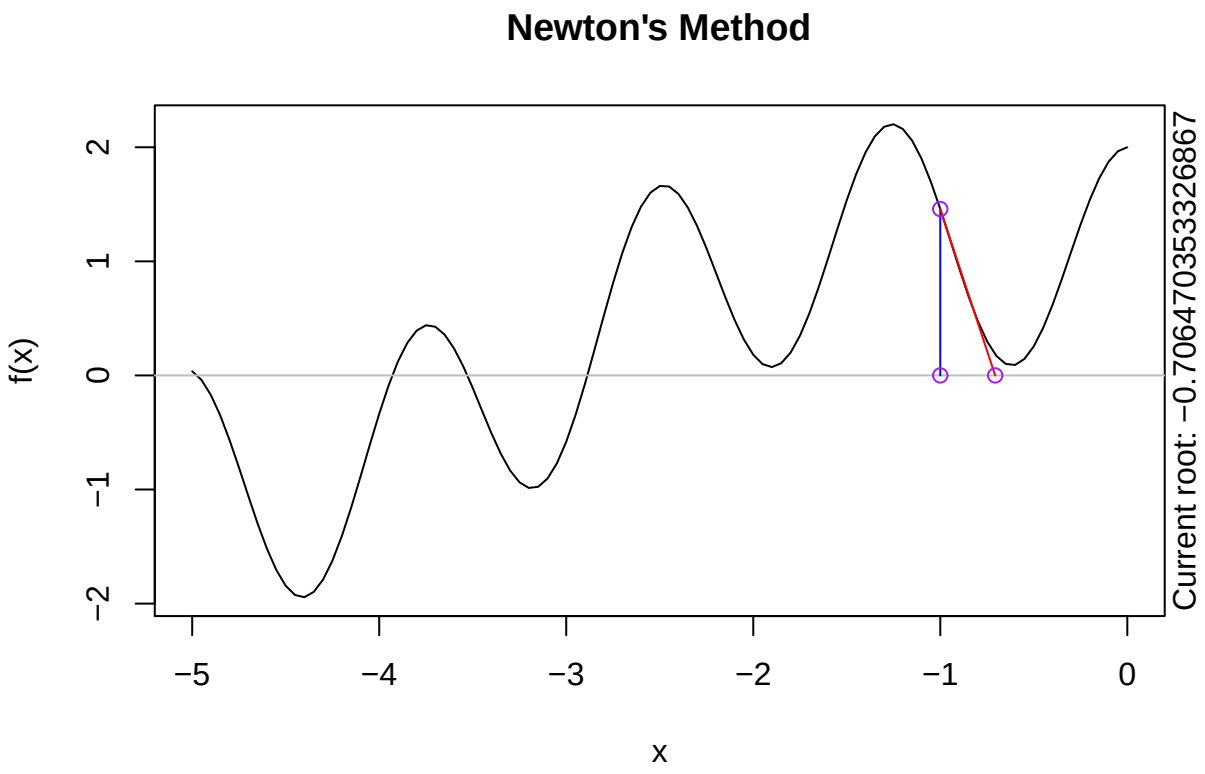
Problem 7

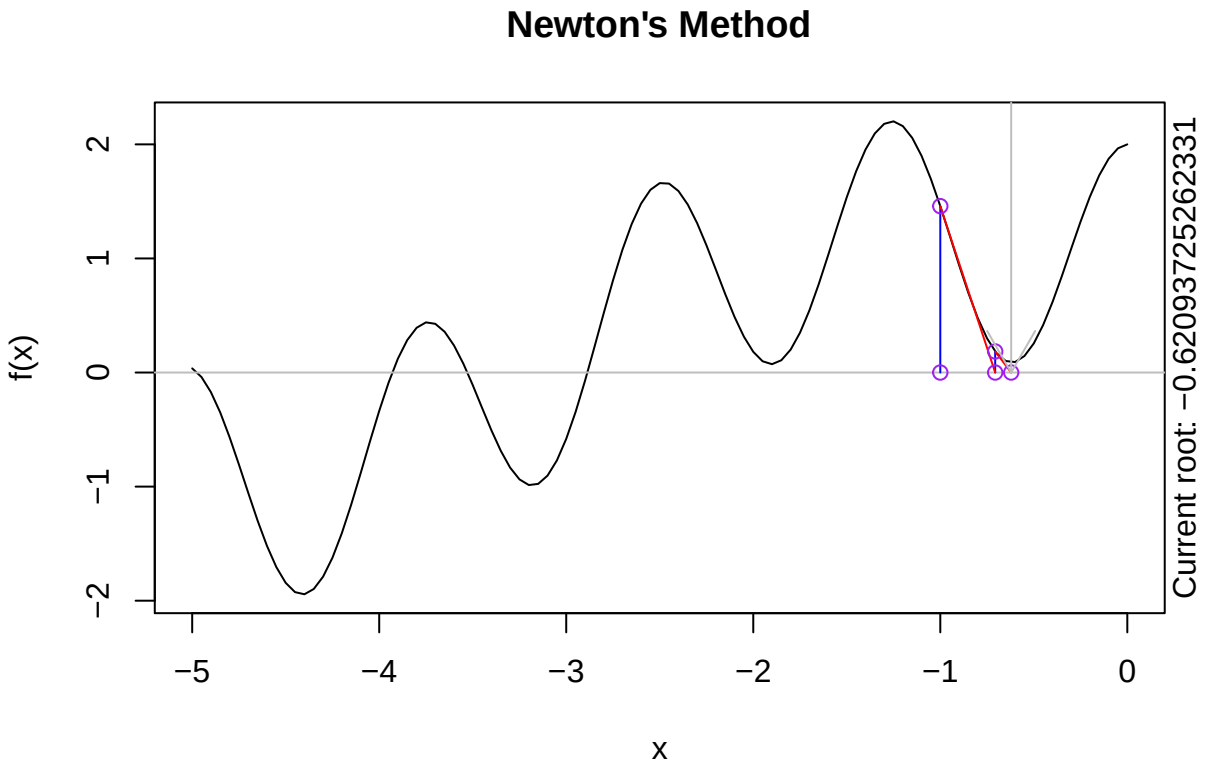
```
blood <- read.table("https://www2.isye.gatech.edu/~jeffwu/wuhamadabook/data/BloodPressure.dat", sep = "
blood <- blood[, -5]
colnames(blood) <- c("Day", "Device 1", "Device 2", "Device 3", "Doctor 1", "Doctor 2", "Doctor 3")
blood
```

```
##    Day Device 1 Device 2 Device 3 Doctor 1 Doctor 2 Doctor 3
## 1    1   133.34   133.36   133.45   126.54   127.36   131.88
## 2    2   110.94   110.85   110.92   124.69   128.86   132.39
## 3    3   118.54   118.56   118.67   125.46   129.43   134.43
## 4    4   137.94   137.80   137.77   125.95   130.72   134.28
## 5    5   139.52   139.62   139.59   125.90   130.13   134.44
## 6    6   139.23   139.11   139.36   127.85   132.03   137.37
## 7    7   117.96   117.81   117.85   125.55   132.05   132.17
## 8    8   119.59   119.42   119.48   125.80   129.87   134.97
## 9    9   116.12   116.00   115.93   125.11   128.09   133.97
## 10  10   128.38   128.48   128.41   125.75   131.94   132.68
## 11  11   125.17   125.25   125.34   128.77   130.05   134.75
## 12  12   134.62   134.41   134.55   125.26   131.13   134.29
## 13  13   136.14   136.07   136.22   126.26   130.91   133.38
## 14  14   131.21   131.03   130.96   125.68   128.83   135.67
## 15  15   132.51   132.86   132.65   124.47   129.46   134.39
```

Problem 8

```
newton.method(FUN = function(x) 3^x - sin(x) + cos(5*x), init = -1, rg = c(-5, 0), tol = .1, interact =
```




Newton's Method
f(x)
x
Current root: −0.620937252623 31
2
1
0
−1
−2
−5
−4
−3
−2
−1
0