Code Appendix

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### Jared Yu  
### Computational Statistics  
### Problem Set 1  
  
# Problem 1  
favorite <- read.table(file = 'favorite.data', header = FALSE)  
# part a  
mean(favorite[,1])  
  
# part b  
median(favorite[,1])  
  
# part c  
sd(favorite[,1])  
  
# part d  
min(favorite[,1])  
  
# part e  
max(favorite[,1])  
  
# part f  
hist(favorite[,1], main = 'Histogram of Favorite Data', xlab = 'Value of Favorite')  
  
# Problem 2  
set.seed(1)  
random\_values <- rnorm(n = 10000, mean = 0, sd = 1)  
  
# part a  
hist(random\_values, main = 'Histogram of Random Standard Normal Values', xlab = 'Value of Random Data')  
  
# part b  
mean(random\_values); median(random\_values); sd(random\_values)  
  
# Problem 3  
a <- seq(from = 5, to = 160, by = 5); b <- seq(from = 87, to = 56); d <- a \* b  
  
# part a  
d[15:17]  
  
# part b  
d[d>2000]  
  
# part c  
length(d[d>6000])  
  
# Problem 4  
sum\_perfect\_squares <- function(x) {  
 sum(which(sqrt(1:x) %% 1 == 0))  
}  
# part a  
sum\_perfect\_squares(100)  
  
# part b  
sum\_perfect\_squares(100000)  
  
# Problem 5  
find\_perfect\_squares <- function(x) {  
 which(sqrt(1:x) %% 1 == 0)  
}  
  
# part a  
find\_perfect\_squares(500)  
  
# part b  
perfect\_squares\_matrix <- matrix(find\_perfect\_squares(100000), ncol = 4)  
sink('perfect\_squares\_matrix.txt')  
perfect\_squares\_matrix  
sink()  
  
# part c  
perfect\_squares\_matrix[15, 3]  
  
# Problem 6  
x <- seq(from = -pi, to = pi, length.out = 50)  
y1 <- sin(x)  
y2 <- cos(x)  
  
# part a  
plot(y1, x, main = 'Part a')  
  
# part b  
plot(y2, x, type = 'l', main = 'Part b')  
  
# part c  
plot(y2, x, type = 'l', main = 'Part c')  
abline(a = 1, b = -1/3)