Chapter 3.4: Exercises: 7 and 8

7.Create a user defined function named *student function* that transposes a numeric matrix (columns become rows) and subsetsvthe matrix in a way so that only the first 5 rows remain in the dataset.

a) Use the *studentfunction* function to transform the matrix created in Exercise 7 from chapter 2.

b) Use the *studentfunction* function to transform the matrix that was given as an example in chapter 2.1

> mat = list(10, 52, 28, 35, 0, 11, 19, 40, 26, 12, 9, 7, 6, 5, 16, 15, 10, 99, 87, 81, 19, 22, 33, 91, 200)

> prev\_mat <- matrix(data = mat, nrow = 5, ncol = 5, byrow = FALSE)

> prev\_mat

[,1] [,2] [,3] [,4] [,5]

[1,] 10 11 9 15 19

[2,] 52 19 7 10 22

[3,] 28 40 6 99 33

[4,] 35 26 5 87 91

[5,] 0 12 16 81 200

> mat21 = c(1:9)

> mat\_21 <- matrix(data = mat21, nrow = 3, ncol = 3, byrow = TRUE)

> mat\_21

[,1] [,2] [,3]

[1,] 1 2 3

[2,] 4 5 6

[3,] 7 8 9

> student <- function(df){

+ new\_matrix <- as.data.frame(matrix(nrow=ncol(df), ncol=nrow(df)))

+ for (a in 1:nrow(df)){#this loop goes over the columns

+ for(b in 1:ncol(df)){#this loop goes over the rows

+ new\_matrix[b,a] <- df[a,b]

+ }

+ }

+ return(new\_matrix)

+ }

> new\_prev\_mat <- student(prev\_mat)

> new\_prev\_mat

V1 V2 V3 V4 V5

1 10 52 28 35 0

2 11 19 40 26 12

3 9 7 6 5 16

4 15 10 99 87 81

5 19 22 33 91 200

> new\_mat\_21 <- student(mat\_21)

> new\_mat\_21

V1 V2 V3

1 1 4 7

2 2 5 8

3 3 6 9

8.Create a user defined function named *transformmatrix* that takes the diagonal of a matrix and calculates a vector with two elements. Element one is the mean of the diagonal and element two is the median.

a) Use the *transformmatrix* function to transform the matrix created in Exercise 7 from chapter 2.

b) Use the *transformmatrix* function to transform the matrix that was given as an example in chapter 2.1

> # 8

> # Create a user defined function named transformmatrix that takes

> # the diagonal of a matrix and calculates a vector with two elements.

> # Element one is the mean of the diagonal and element two is the median.

> transformmatrix <- function(my\_matrix){

+ n = min(nrow(my\_matrix),ncol(my\_matrix))

+ # new\_df <- as.data.frame(matrix(nrow=1, ncol= n ))

+ new\_df=c()

+ for(i in 1:n){

+ # new\_df[1,i]<-my\_matrix[i,i]

+ new\_df[i]<-(my\_matrix[i,i])

+ }

+ return(c(mean(as.numeric(new\_df)),median(as.numeric(new\_df))))

+ }

> my\_vertor<-transformmatrix(prev\_mat)

> my\_vertor

[1] 64.4 19.0

Chapter 4.4: Exercise: 9

9. For the iris dataset (no need to call a function, iris is part of the base R) create for loop that does the following to each observation:

a) changes the Species column from a character type to numeric. Assign 1 for setosa, 2 for virginica, and 3 for versicolor,

b) creates a new column that groups the Petal.Length into 3 groups: group#1 for Petal.Length from 0 to 2, group #2 from 2.01 to 4.5, and group #3 from 4.51 to 7.

Chapter 6.7: Exercise: 3

3.Using the iris dataset:

a) combine the Setosa and Versicolor into group “0” and label the Virginica to “1”. Create a new variable called iris$Group with the 0 or 1 labels,

b) build a logistic regression model using any available data that will predict the observation being Virginica ( value of 1 in Group variable),

c) calculate the probability of a new plant being a Virginica for the following parameters:

Sepal.Width =5

Petal.Length =10

Petal.Width =7

Sepal.Length=9