Workshop 4 Solution

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For the first two problems we’ll use the Cars93 data set from the MASS library.

library(MASS)

#### 1. Manipulating data frames

Use the transform() and log() functions to create a new data frame called Cars93.log that has MPG.highway and MPG.city replaced with log(MPG.highway) and log(MPG.city).

Cars93.log <- transform(Cars93, MPG.highway = log(MPG.highway), MPG.city = log(MPG.city))

#### 2. Functions, lists, and if-else practice

**(a)** Write a function called isPassingGrade whose input x is a number, and which returns FALSE if x is lower than 50 and TRUE otherwise.

isPassingGrade <- function(x) {  
 did.pass <- TRUE  
 if(x < 50) {  
 did.pass <- FALSE  
 }  
 did.pass  
}  
  
isPassingGrade(45)

## [1] FALSE

isPassingGrade(90)

## [1] TRUE

# Here's an alternative, using different syntax  
  
isPassingGrade2 <- function(x) (x >= 50)  
  
isPassingGrade2(45)

## [1] FALSE

isPassingGrade2(90)

## [1] TRUE

**(b)** Write a function called sendMessage whose input x is a number, and which prints Congratulations if isPassingGrade(x) is TRUE and prints Oh no! if isPassingGrade(x) is FALSE.

sendMessage <- function(x) {  
 if(isPassingGrade(x)) {  
 print("Congratulations!")  
 } else {  
 print("Oh no!")  
 }  
}  
  
sendMessage(45)

## [1] "Oh no!"

sendMessage(90)

## [1] "Congratulations!"

# Here's another way of accomplishing the same thing  
  
sendMessage2 <- function(x) print(ifelse(isPassingGrade(x), "Congratulations", "Oh no!"))  
  
sendMessage2(45)

## [1] "Oh no!"

sendMessage2(90)

## [1] "Congratulations"