Workshop 5 Solution

Veerasak Kritsanapraphan

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.

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

sendMessage(45)
```

```
## [1] "Oh no!"
```

```r
sendMessage(90)
```

```
## [1] "Congratulations!"
```

```r
# Here's another way of accomplishing the same thing

sendMessage2 <- function(x) print(ifelse(isPassingGrade(x), "Congratulations", "Oh no!"))

sendMessage2(45)
```

```
## [1] "Oh no!"
```

```r
sendMessage2(90)
```

```
## [1] "Congratulations"
```