Basic Course on **R**: The apply family of functions - Practical

David Nieuwenhuijse

May 18th - 24th, 2017

Part D: Using the apply family of functions

1. Use apply() to turn the following code into something shorter:

```r
#This function determines if a number is a prime number
isPrime <- function(num){
  if (num == 2) {
    return(TRUE)
  }
  if(num > 1) {
    for(i in 2:(num-1)) {
      if ((num %% i) == 0) {
        return(FALSE)
      }
    }
  } else {
    return(FALSE)
  }

  return(TRUE)
}

#The matrix with numbers to be checked:
mat <- matrix(1:100, nrow=10)
#The matrix with answers (TRUE/FALSE)
answer <- matrix(rep(x = TRUE,100), nrow=10)

for (x in 1:10) {
  for (y in 1:10) {
    answer[x,y] <- isPrime(mat[x,y])
  }
}

#The resulting prime numbers:
mat[answer]
```

```
## [1]  2  3  5  7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83
## [24] 89 97
```

2. Answer question 2.3 again using the lapply() function.

3. Answer question 2.3 again using the sapply() function. What is the class of the output?

4. Read in the diamonds.txt dataset using read.table, make sure the headers are correctly loaded. Calculate the average price of diamonds by color and clarity using the tapply function.