

Basic Course on **R**: Apply family of functions

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0.1 Part D: Using the apply family of functions

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

```
#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.