Homework 2

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library(tidyverse)

## ── Attaching packages ─────────────────────────────────────── tidyverse 1.3.2 ──  
## ✔ ggplot2 3.3.6 ✔ purrr 0.3.4  
## ✔ tibble 3.1.8 ✔ dplyr 1.0.9  
## ✔ tidyr 1.2.0 ✔ stringr 1.4.1  
## ✔ readr 2.1.2 ✔ forcats 0.5.2  
## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## ✖ dplyr::filter() masks stats::filter()  
## ✖ dplyr::lag() masks stats::lag()

library(dplyr)

**Question 1**

logFunction <- function(n){  
 return(sum(log(n)+log10(n)+log2(n)))  
}  
logFunction(2)

## [1] 1.994177

logFunction(4)

## [1] 3.988354

logFunction(6)

## [1] 5.154873

logFunction(8)

## [1] 5.982532

logFunction(10)

## [1] 6.624513

**Question 2**

bigNumber <- function(n){  
 if(n^2 >=100){  
 print("This is a big number")  
 }  
 else{  
 print("This is not a big number")  
 }  
}  
  
bigNumber(20)

## [1] "This is a big number"

bigNumber(4)

## [1] "This is not a big number"

**Question 3**

team\_A <- 2  
team\_B <- 2  
  
if (team\_A > team\_B){  
 print ("Team A won")  
} else if (team\_A < team\_B){  
 print ("Team B won")  
} else {  
 "Team A won" ## changed this line to say team a won  
}

## [1] "Team A won"

**Question 4**

divisible <- function(n){  
 if(n%%3 == 0 & n %% 5 == 0){  
 print("divisible by Three and Five")  
 }  
 else if(n %%3 == 0 & n %%4 == 0){  
 print("divisible by Three and Four")  
 }  
 else{  
 print("neither")  
 }  
}  
divisible(16)

## [1] "neither"

divisible(45)

## [1] "divisible by Three and Five"

divisible(24)

## [1] "divisible by Three and Four"

## Question 5

data5 <- mpg %>% select(displ, cyl, cty, hwy)  
output <- vector("double", ncol(data5)) # 1. output  
 for (i in seq\_along(data5)) { # 2. sequence  
 output[[i]] <- var(data5[[i]]) # 3. body  
 }  
 output

## [1] 1.669158 2.597043 18.113074 35.457779

## Question 6

prime <- function(num){  
 if (num == 2) {  
 return(TRUE)}  
 else if (any(num %%2:(num-1) ==0)) {  
 return(FALSE)}  
 else {   
 return(TRUE)}}  
  
for( i in 10:30){  
 if( prime(i) == TRUE){  
 print(i^3 - i^2)}}

## [1] 1210  
## [1] 2028  
## [1] 4624  
## [1] 6498  
## [1] 11638  
## [1] 23548