HW 4: Key

Name here

Please use D2L to turn in both the HTML output and your R Markdown file in.

Q1. Debugging Fuction (10 points)

Debug the following function, by rewritting the function below and demonstrating that the function calls specified below return the correct answer. For a short video of the Monty Hall problem see from 21 with Kevin Spacey or from numb3rs tv show.

```
num.sims <- 10

MontyHallMonteCarlo <- function(num.sims, print){
  # Function to simulate Monty Hall winning probability when switching doors
  # ARGS: number of simulations (as integer or double), print command
  #       that accepts TRUE or FALSE as to whether to print simulation results
  # Returns: list containing winning probability and (if print = TRUE)
  #          vector of results with strings "Win" or "Lose" for each simulation
  if (!num.sims %% 1 == 0) stop('Please enter an integer or double')
  results <- rep(FALSE,num.sims)
  for (i in 1:num.sims){
    # randomly choose door with car
    car.door <- sample(3,1)
    # randomly choose door for participant to select
    select.door <- sample(1,3)
    # you win when switching if the door with a car is not the
    # one you initally selected
    if (car.door == select.door) {
      results <- FALSE
    }
  }
  win.prob <- mean(results)
  ifelse(print, return(list(win.prob,results)),return(list(win.prob)))
}

MonteHallMonteCarlo(8.1,print=T)
```

```
## Error in MonteHallMonteCarlo(8.1, print = T): could not find function "MonteHallMonteCarlo"
```

```
MonteHallMonteCarlo('8.1',print=T)
```

```
## Error in MonteHallMonteCarlo("8.1", print = T): could not find function "MonteHallMonteCarlo"
```

```
MonteHallMonteCarlo(8,print=T)
```

```
## Error in MonteHallMonteCarlo(8, print = T): could not find function "MonteHallMonteCarlo"
```

```
MonteHallMonteCarlo(10000,print=F)
```

```
## Error in MonteHallMonteCarlo(10000, print = F): could not find function "MonteHallMonteCarlo"
```

```
MontyHallMonteCarlo <- function(num.sims, print){
  # Function to simulate Monty Hall winning probability when switching doors
```

```
  # ARGS: number of simulations (as integer or double), print command
  #       that accepts TRUE or FALSE as to whether to print simulation results
  # Returns: list containing winning probability and (if print = TRUE)
  #          vector of results with strings "Win" or "Lose" for each simulation
    if (! typeof(num.sims) %in% c('double','integer')) stop("Please enter num.sims as a double or integ

  if (!num.sims %% 1 == 0) stop('Please enter an integer or double')
  results <- rep(TRUE,num.sims)
  for (i in 1:num.sims){
    # randomly choose door with car
    car.door <- sample(3,1)
    # randomly choose door for participant to select
    select.door <- sample(3,1)
    # you win when switching if the door with a car is not the
    # one you initally selected
    if (car.door == select.door) {
      results[i] <- FALSE
    }
  }
  win.prob <- mean(results)
  ifelse(print, return(list(win.prob,results)),return(list(win.prob)))
}

MontyHallMonteCarlo(8.1,print=T)
```

```
## Error in MontyHallMonteCarlo(8.1, print = T): Please enter an integer or double
```

```
MontyHallMonteCarlo('8.1',print=T)
```

```
## Error in MontyHallMonteCarlo("8.1", print = T): Please enter num.sims as a double or integer type
```

```
MontyHallMonteCarlo(8,print=T)
```

```
## [[1]]
## [1] 0.5
##
## [[2]]
## [1]  TRUE  TRUE  TRUE  TRUE FALSE FALSE FALSE FALSE
```

```
MontyHallMonteCarlo(10000,print=F)
```

```
## [[1]]
## [1] 0.661
```