Homework 8

Code:

```r
my.mode <- function(data) { # create a function named my.mode to find a mode of the dataset

  freq_table <- table(data) # create a variable named freq_table to store the data value
                            # in a form of frequency table using function  table()

  max <- max(freq_table) # create a variable named max to find the maximum value in the table

  if (max == 1) { # return no mode if the max is equal to 1 that mean the data appear only
                  # once
    cat("Result: no mode", "\n")
  }
  else if ((all(freq_table == max)) && length(unique(data)) >= 2) { # return no mode if the
                                                                    # all data are equal to
                                                                    # maximum value that mean
                                                                    # there are many value
                                                                    # with the same max
                                                                    # also, if the unique
                                                                    # value in the set are
                                                                    # more than or equal to 2
    cat(" Result: no mode", "\n")
  }
  else { # return the result of mode if the dataset did not meet the above conditions
    modes <- names(freq_table[freq_table == max])
    cat("Result:", modes, "\n")
  }
}

dataset1 <- c(1, 2, 3, 4, 5) # create dataset 1
dataset2 <- c(3, 3, 3, 3, 3) # create dataset 2
dataset3 <- c(1, 2, 2, 3, 4, 4, 5) # create dataset 3
dataset4 <- c(1, 1, 2, 2, 3, 3, 4, 4, 5) # create dataset 4
dataset5 <- c(1, 1, 2, 2, 3, 3, 4, 4, 5, 5) # create dataset 5

modedataset1 <- my.mode(dataset1) # find the mode of the dataset 1
modedataset2 <- my.mode(dataset2) # find the mode of the dataset 2
modedataset3 <- my.mode(dataset3) # find the mode of the dataset 3
modedataset4 <- my.mode(dataset4) # find the mode of the dataset 4
modedataset5 <- my.mode(dataset5) # find the mode of the dataset 5
```

Result:

```
> modedataset1 <- my.mode(dataset1) # find the mode of the dataset 1
Result: no mode

> modedataset2 <- my.mode(dataset2) # find the mode of the dataset 2
Result: 3

> modedataset3 <- my.mode(dataset3) # find the mode of the dataset 3
Result: 2 4

> modedataset4 <- my.mode(dataset4) # find the mode of the dataset 4
Result: 1 2 3 4

> modedataset5 <- my.mode(dataset5) # find the mode of the dataset 5
 Result: no mode
```

Conclusion:

From the experiment, my.mode is the function that demonstrates how to find the mode using the maximum value in that dataset. The mode of dataset 1 is no mode, dataset 2 is 3, dataset 3 is 2 and 4, dataset 4 is 1, 2, 3, and 4, and dataset 5 is no mode. In my opinion, it will have no mode when all values occur at once or occur more than or equal to 2 with the same maximum value, and the others will have the mode.