Lab 1 - IE 6200 - Sec 09

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Task 1: Use the getwd() function in R to show your current working directory.

```
getwd()
```

```
## [1] "C:/Users/Jordan Lian/OneDrive - Northeastern University/Fall 2020/IE 6200/Lab 1"
```

Task 2: Create 2 variables given below and find the class of these 2 variables

a. x <- 1: numeric class

```
x <- 1
class(x)
```

```
## [1] "numeric"
```

b. y <- "1": character class

```
y <- "1"
class(y)
```

```
## [1] "character"
```

Task 3: Create a numerical vector "vect" with elements {9, 8, 7, 6, 4} of length 5. Using vector indexing show how you can display the third element in this vector in two different ways.

```
vect <- c(9, 8, 7, 6, 4)

# Indexing method 1
vect[3]
```

```
## [1] 7
```

```r
# Indexing method 2
vect[c(3)]
```

```
## [1] 7
```

Task 4: Create a 2x2 matrix having the following elements {1, 2, 3, 4} using the matrix() function in R and store it in a variable A. Use rbind() on matrix A to add a row with elements {5, 6} to get a 3x2 matrix and store it in B. Further, use matrix B and add a column having elements {7, 8, 9} to it using cbind(). Display A, B, and C.

```r
# 2x2 Matrix: A
A <- matrix(
  c(1, 2, 3, 4), # the data elements
  nrow = 2, # number of rows
  ncol = 2, # number of columns
  byrow = TRUE # fill up by row
)
A
```

```
##      [,1] [,2]
## [1,]    1    2
## [2,]    3    4
```

```r
# Row {5, 6}
D <- matrix(
  c(5, 6),
  nrow = 1,
  ncol = 2,
  byrow = TRUE)

# Add new row D to matrix A, store as B
B <- rbind(A, D)
B
```

```
##      [,1] [,2]
## [1,]    1    2
## [2,]    3    4
## [3,]    5    6
```

```r
# New column E
E <- matrix(
  c(7, 8, 9),
  nrow = 3,
  ncol = 1,
  byrow = TRUE
)

# Add new column E to matrix B, store as C
C <- cbind(B, E)
C
```

```
##      [,1] [,2] [,3]
## [1,]    1    2    7
## [2,]    3    4    8
## [3,]    5    6    9
```

Task 5: Use the iris data frame that is available in R and display the first and last 5 rows of the data frame.

```
head(iris, 5)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
```

```
tail(iris, 5)
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width   Species
## 146          6.7         3.0          5.2         2.3 virginica
## 147          6.3         2.5          5.0         1.9 virginica
## 148          6.5         3.0          5.2         2.0 virginica
## 149          6.2         3.4          5.4         2.3 virginica
## 150          5.9         3.0          5.1         1.8 virginica
```

Conclusion

For the first four tasks, there were no statistical inferences nor observations because those tasks entailed basic mathematical functions in R. For the fifth and final task, I have a few observations from the iris dataset. First, the first 5 flowers were setosas, while the last 5 were virginicas. Second, the petal widths for the setosas are identical (0.2) whereas they vary within the virginicas. Third, the virginicas' sepal and petal lengths are consistently larger than those of the setosas'. However, these conclusions are from a very small sample, but the same type of logical thinking will be applied towards larger datasets or samples of those datasets.

References

- https://www.datasciencemadesimple.com/get-first-n-rows-last-n-rows-head-and-tail-function-in-r/