STAT13, Lab 1

1 Installing R & R Studio

Please install the most recent version of R & RStudio on your computer. If you do not have a computer, ask a friend or roommate if you can install it on theirs (you can uninstall it when you are done). As proof of completion, issue this command:

```
system("who", intern=TRUE)
```

or if you are running Windows:

```
system("whoami", intern=TRUE)
```

2 Installing Packages

Using R commands (not point and click) demonstate that you know how to install and load the packages **MASS**, **readr**, and **foreign**. As a proof, issue the relevant commands and display the result.

Application of Basic R Rules

3 Please use R as a calculator and show how to get the answers for:

3A
$\frac{36^3}{7^8}$

3B
$6833 - 843$

3C
$13^{\frac{3}{5}}$

3D
$6^{\frac{3}{2}}$

3E
$\frac{6791+2083-296+3359+502-6429+3834}{7}$

4 Vectors

4.1A Please create a numeric vector with (any) 10 elements that are not in a sequence.

4.1B Please create a numeric vector consisting of the even numbers from 1 to 100.

4.1C Please write a single line of code that will generate a vector of the form -m^3, -(m-1)^3, . . . , -1, 0, 1, (m-1)^3, m^3 for any m.

4.1D Using your 10 element numeric vector from part (a), demonstrate how to divide each element by 4 and then square each the resulting values.

4.1E Show how to square only the 3rd and 9th elements of your 10 element numeric vector from part A(this can be done with a single line of code, no semi colons allowed). Your final result should have 10, not 2 elements and maintain their original ordering.

4.2A Here are four vectors for you to create: A: (2,6,3,4,6,1,2,1,1), B: (2,3,1,1,1,3,5,8,8,7,3), C: (8,8,7,3,3,4,6,6,1,1,1), D: (2,3,1,1,7,7,5,7). Which one has the highest mean?

4.3B Which one has the greatest standard deviation?

5 Character (String) and Logical Vectors

5A Create a character vector which looks like this when you print it.

```
## [1] "stat"       "data"       "compute"    "schoenberg" "homework"
## [6] "awesome"    "TA"
```

5B Show how to print the only last two elements of the character vector. This requires only one line of code.

6 Data Frames

6A Demonstrate that you are able to use the function data() and that you know what a data frame is by finding a built-in dataset. Please briefly identify the dataset.

6B How many observations and how many variables does your data frame have? Use any R function to reveal this information.

6C Reading in CSV files: Directly load into R, the file found in http://www.ats.ucla.edu/stat/data/hsb2.csv.

6D Reading in CSV files: Download the file from part C on to your computer and then read it in.