

ICPSR: Network Analysis I

Assignment 3

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Write a single R script (a .R file) that answers each of the following questions. Simply comment out text that you write to answer each question, and ensure that the code you write can be ran on any computer.

1. Create the vector

```
> myAtomicVector <- c(1, 4, 3, 2, NA, 3.22, -44, 2, NA, 0, 22, 34)
```

Now, create code that runs to answer each of the following questions.

- (a) How many positive numbers (> 0) are there in this vector?
 - (b) How many negative numbers (< 0) are there in this vector?
 - (c) How many 0's are there in this vector?
 - (d) How many NAs are there in this vector?
 - (e) How many numbers in the vector are non-zero **and** not NAs?
 - (f) What is the sum of the positive numbers in this vector?
 - (g) What is the sum of the negative numbers in this vector?
2. Create the following vectors, populated with information about the ICPSR summer courses in Session I.
 - **courseName**: course name of each course
 - **courseProf**: name of the instructor for each course
 - **enrolled**: a logical vector indicating whether or not you are enrolled in the course
 - **anticipatedGrade**: your anticipated letter grade in each course, with an NA for any course for which you are **not** enrolled
 - **anticipatedHours**: your anticipated hours spent on each class per week based on your experience so far, with an NA for any course for which you are **not** enrolled.
 3. Create and print a data frame called **MyCourseDataFrame** by combining all of the above vectors. Assign the names of each column to be the names of the original vectors. Summarize the **type** of each column. Do the data frame variables retain their original classes? Formally test this using appropriate R code.
 4. Combine the vectors from (1) into a list called **MyCourseDataList**, where each vector is an element of the list. Assign the names of each element to be the names of the original vectors. Do the elements of the list maintain their original classes? Formally test this using appropriate R code.

5. Write code that returns the following values:
- The values in `courseNum`, excluding the fourth value
 - The total number of hours you anticipate spending on coursework, both per week, and on average number of hours you anticipate spending for these courses.
 - A data frame with only the third row and first two columns of `myCourseDataFrame`
 - The first value in the second element of `MyCourseDataList`
6. Convert the `anticipatedGrade` variable in `MyCourseDataFrame` into a factor using the function `factor()`. Note: to get an ordering of values, you'll have to use the argument `is.ordered = TRUE`. Look at the documentation of `factor()` to understand how to do this. Now write code to answer the following questions, and output the answers.
- (a) What is the maximum letter grade you anticipate receiving this semester?
- (b) What is the minimum number of hours you expect to work per week in a class this semester? Is this in this course?