Homework 1 - R

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1/8/2017

Due 1/18 - By Start of Class

Exercise 1 : Making Vectors (7.5 points)

Start by making a vector with the numbers 1 through 26. Multiply the vector by 2, and give the resulting vector names A through Z (hint: there is a built in vector called `LETTERS`)

Exercise 2 : Matrix (7.5 points)

1. Make a matrix containing the numbers 1:50, with 5 columns and 10 rows.
2. Make the matrix above fill your matrix by row, not by column (its default behaviour). (hint: read the documentation for `matrix`!)

Exercise 3 : Data Frame (15 points)

You can create a new data frame right from within R with the following syntax:

```
df <- data.frame(id = c('a', 'b', 'c'),
                 x = 1:3,
                 y = c(TRUE, TRUE, FALSE),
                 stringsAsFactors = FALSE)
```

Make a data frame that holds the following information for yourself:

- first name
- last name
- lucky number

Then use `rbind` to add an entry for the people sitting beside you. Finally, use `cbind` to add a column with each person's answer to the question, "Is it time for coffee break?"

Exercise 4 : Lists (5 points)

Given the following list:

```
xlist <- list(a = "Software Carpentry", b = 1:10, data = head(iris))
```

Using your knowledge of both list and vector subsetting, extract the **number 2** from xlist. Hint: the number 2 is contained within the "b" item in the list.

Exercise 5 : Subsetting gapminder (15 points)

Fix each of the following common data frame subsetting errors:

1. Extract observations collected for the year 1957

```
gapminder[gapminder$year = 1957,]
```

2. Extract all columns except 1 through to 4

```
gapminder[,-1:4]
```

3. Extract the rows where the life expectancy is longer the 80 years

```
gapminder[gapminder$lifeExp > 80]
```

4. Extract the first row, and the fourth and fifth columns (`lifeExp` and `gdpPercap`).

```
gapminder[1, 4, 5]
```

5. Advanced: extract rows that contain information for the years 2002 and 2007

```
gapminder[gapminder$year == 2002 | 2007,]
```