

Problem set - 3

1. Create a list that contains, in this order, a sequence of 20 evenly spaced numbers between -4 and 4; a 3×3 matrix of the logical vector $c(F,T,T,T,F,T,T,F,F)$ filled column-wise; a character vector with the two strings “kella” and “fateh”; and a factor vector containing the observations $c(\text{“LOW”}, \text{“MED”}, \text{“LOW”}, \text{“MED”}, \text{“MED”}, \text{“HIGH”})$. Then, do the following:
 - (a) Give appropriate name to each element of the list.
 - (b) Extract row elements 2 and 1 of columns 2 and 3, in that order, of the logical matrix.
 - (c) Use `sub` to overwrite “fateh” with “Fateh” and “kella” with “Kella” inside the list. Then, using the newly overwritten list member, concatenate to the console screen the following statement exactly:

```
"Found the killing weapon!"  
-\Kella Fateh/-
```
 - (d) Using `which`, determine which indexes in the factor vector are assigned the “MED” level.
2. Create and store this data frame as `dframe` in your R workspace:

person	sex	funny
Stan	M	High
Francine	F	Med
Steve	M	Low
Roger	M	High
Hayley	F	Med
Klaus	M	Med

Here the attribute `person` should be a character vector, `sex` should be a factor with levels F and M, and `funny` should be a factor with levels Low, Med, and High.

- (a) Stan and Francine are 41 years old, Steve is 15, Hayley is 21, and Klaus is 60. Roger is extremely old - 1,600 years. Append these data as a new numeric column variable in `dframe` called `age`.
- (b) Use your knowledge of reordering the column variables based on column index positions to overwrite `dframe`, bringing it in line with `mydata`. That is, the first column should be `person`, the second column `age`, the third column `sex`, and the fourth column `funny`.
- (c) Now store the following data to a data frame named `mydata2`.

person	age	sex	funny
Peter	42	M	High
Lois	40	F	High
Meg	17	F	Low
Chris	14	M	Med
Stewie	1	M	High
Brian	7	M	Med

- (d) Now, combine `mydata2` with `dframe`, naming the resulting object `mydataframe`.

- (e) Write a single line of code that will extract from mydataframe just the names and ages of any records where the individual is female and has a level of funniness equal to Med OR High.
- (f) Use your knowledge of handling character strings in R to extract all records from mydataframe that correspond to people whose names start with S. (Hint: substr can be used. Use ?substr to see the help)

3. Store the following vector:

```
> foo <- c(13563, -14156, -14319, 16981, 12921, 11979, 9568, 8833, -12968, 8133)
```

Then do the following:

- (a) Output all elements of foo that, when raised to a power of 75, are NOT infinite.
- (b) Return the elements of foo, excluding those that result in negative infinity when raised to a power of 75.