Practicals Part 1

October 26, 2014

1 Prepare!

1. copy the session2 folder for today's lesson
2. Run RStudio and change your working directory to this copied directory
3. Try to use R as a calculator: What is greater e^{π} or π^{e}.
4. Try the graphical demo using `demo(graphics)` at the commend line.
5. Look at the objects created by this demo by the function `ls()`. Please do NOT omit the parenthesis!
6. Delete all objects with `rm(list=ls())`

2 Commands you will need

PS: you may not really *need* all of them but *all of them* will be helpful

- `load()`
- `c()`
- `seq()`
- `rep()`
- `length()`

3 Indexing

1. Create a vector w with components 1, -1, 2, -2
2. Display this vector
3. Obtain a description of w using str()
4. Create the vector w2 as w+1, and display it.
5. Create the vector v with components (0, 1, 5, 10, 15, ... , 75) using c() and/or seq().
6. Find the length of this vector.

3.1 Displaying and changing parts of a vector (indexing)

First try to understand the following commands: (you can input the vector via the keyboard or load it - it is contained in the session2 folder)

```
> x <- c(2, 7, 0, 9, 10, 23, 11, 4, 7, 8, 6, 0)
> x[4]
> x[3:5]
> x[c(1, 5, 8)]
> x[x > 10]
> x[(1:6) * 2]
> x[x == 0] <- 1
> x
> ifelse(round(x/2) == x/2, "even", "odd")        ## this is an extra
```

Now try the following (for the modifying parts, first try to display):

1. Display every third element in x
2. Display elements that are less than 10, but greater than 4
3. Modify the vector x, replacing by 10 all values that are greater than 10
4. Modify the vector x, multiplying by 2 all elements that are smaller than 5
5. Create a new vector y with elements 0,1,0,1, . . . (12 elements) and a vector z that equals x when y=0 and 3x when y=1. (You can do it using ifelse, but there are other possibilities)

3.2 Displaying and changing parts of a data frame (indexing part2)

Load the data `session2/presidential.rdata`. Have a look at the `presidential` data set.

1. Display only lines containing Republican presidents
2. Display only lines containing Democratic presidents
3. Display only lines with presidents reigned longer than 3 but less than 6 years
4. type and understand the following commands

```
> table(presidential$party)
> presidential$durmax <- presidential$duration==8
> table(presidential$party,presidential$durmax)
```