Statistical Methods

Yiannis Tsapras

Exercise 1 for **August 5**, 2024, 18:00

This exercise sheet contains a substantial amount of reading and self-study.

1.1 Familiarise youself with R and the R-environment

a: Familiarize yourself with the R-system installed on your own computer. How do I start R? How do I stop R? How do I handle graphics windows – in case you do not use Jupyter notebooks?

b: If you are using Jupyter notebooks try them out (either on the KIP server or your local installation)!

c: Have a look at Venables' *An Introduction to R* (in the docs of the UKSta website), in particular read the chapters 5, 6, 7, and 9. They will help greatly in the following exercises.

d: Keep the Base R Cheat sheet nearby (also in the docs of the UKSta website).

Nothing needs to be handed in here.

1.2 First real steps in R

Using what you learned today, you should be able to the following things:

a: R-control statements: Write a simple *function* that prints out the first n prime numbers on the screen, where n is the argument of the function (use small values for n).
Hints: Use nested loops, if statements and logical operators. Make use of the modulo operator (`%%`).

b: A bit of R I/O: download the file `abstract_rankings.txt` from exercise 01 of the UKSta website. The file contains the rankings of 43 abstracts submitted to a conference by a panel of six experts. The experts are simply named "A" ... "F". The abstracts are ranked into three categories viz. "1" low, "2" medium", and "3" high priority. Read-in the file using the `read.table()` function. You should specify `header=TRUE` so that the first row is interpreted as column names. The reading routine returns a `data.frame`. Make a bit of statistics by counting how many times a particularly expert has given a particular rank, store it in a matrix, and print it out. The result should be a table looking something (not necessarily exactly!) like this

```
     A  B  C  D  E  F
1   xx xx xx xx xx xx
2   xx xx xx xx xx xx
3   xx xx xx xx xx xx
```

To make it look nice, read the documentation on `cat()` and `format()`.