Biometry. Lecture 5

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Outline

1. [Questions and answers](#)

2. [Obtaining data](#)
   - [Entering data into R](#)
   - [Saving data from R](#)
   - [Overgrown calculator](#)
   - [The basics of R graphics](#)

Outline

Starting...

> setwd("<working folder>")
             or
        "Change dir"
          in menu!

Previous final question: the answer

File `eq.txt` has tabs instead of semicolons as delimiters.
How to use `read.table()` command in this case?

```
> read.table("data/eq.txt") # or
> read.table("data/eq.txt", sep="\t")
```

In our case, both ways are equal. However, this is true only if your data has no spaces in cells. If spaces are present, the second way is the only option.

Obtaining data
Entering data into R

R and Excel connection: "xlsx" package

```
> install.packages("xlsx") # this is needed only once
# choose the right mirror, wait for installation
> library(xlsx)
# suppose you have file "1.xlsx" in the "data" subfolder:
> read.xlsx("data/1.xlsx", sheetIndex=1)
```

R binary format

It is useful if you need to save and load big data objects faster

```
> x <- "apple"
> x
> save(x, file="data/x.rd")
> rm(x) # delete
> ls() # list all objects
> exists("x") # check if object exists
> load("data/x.rd")
> x
```

We saved R object, deleted it and loaded again from binary file. If you want to remove all objects, run rm(list=ls()) (be careful!).

Obtaining data
Saving data from R

Writing tables

```
> trees
> write.table(trees, file="trees.txt")
> file.show("trees.txt")
```

Writing protocol

```
> sink("1.txt", split=TRUE)
> 2 + 2
> sink()
```

Saving history

```
> history()
> savehistory("20140203.r")
```

You should always save your R session. You may than convert it to the script to make your work automated.

Saving workspace

```
> save.image("20140203.rd")
> load("20140203.rd")
```

If you save the image, you may the restore all object created during the R session. The image will be saved in R binary format.

Making a script

```
> file.edit("1.r")
# When editor opens, enter ``print("Hello, world!")'', close and s
> source("1.r")
```

How to start and to finish

```
> getwd()
> setwd(...)
# (Or do it through menu: File > Change dir)
> savehistory("<name>.r")
# (Or save content of R console on Mac OS X)
```

Obtaining data

Overgrown calculator

Vectorizarion and brackets

```
> log(((sqrt(sum(c(2,2))))^2)*2.5)
```

Calculation order: from inside to outside

The order of calculations

```
> 2+3*5
but
> 2+(3*5)
is better!
```

Distributions

```
> rnorm(15)
```

rnorm() is one of almost 20 embedded distributions. By default, mean is 0 and sd is 1. You may change it, e.g., rnorm(15, mean=10) will give numbers around 10.

Normal distribution is a result of the influence of *multiple independent random factors*, dart game is a good example.

Obtaining data

The basics of R graphics

Simple plot

```
> plot(1:20)
```

Title and legend

```
> plot(1:20, main="My very important title")
> legend("topleft", pch=1, legend="My precious dots")
```

legend() needs to "understand" what (color, points etc.) to describe;
pch is a type of points. You may use plot(1:20, pch=2) to have
triangles as dots.

Two types of graphical commands: plotting and adding

```
> plot(cars)
> title(main="Cars of 1920s")
```

cars is and embedded data, run ?cars for explanation

plot() is a smart (generic) command

```
> plot(cars)
> plot(trees)
> plot(uspop)
> plot(HairEyeColor)
```

Types of `plot()`

```
> plot(uspop, type="p")
> plot(uspop, type="l")
> plot(uspop, type="c")
> plot(uspop, type="s")
> plot(uspop, type="o")
> plot(uspop, type="b")
```

Summary: most important commands

- `plot()` draws plots

For Further Reading

A. Shipunov.
Biometry [Electronic resource].
2012—onwards.
Mode of access:
http://ashipunov.info/shipunov/school/biol_240

A. Shipunov, and others.
Visual statistics. Use R!
DMK Press, 2012. Translated from Russian.