Biometry. Lecture 6

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Outline

> setwd("<working folder>")

or

"Change dir"

in menu!

(getwd() is for checking the folder, dir() checks the folder content)

R and data
Saving data from R

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!).

Writing tables

```
> trees
> ?trees # tells you what is it
> write.table(trees, file="trees2.txt")
> file.show("trees2.txt")
```

Writing the report

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

(`split=T` writes to file and to console)
Always close `sink()`!

Making a script

```
> file.edit("hello.r") # on Linux file.edit("hello.r", editor="nar
# In the editor, enter print("Hello, world!"), close and save
> source("hello.r", echo=T) # echo=T will show command output
```

Saving history

```
> history()
> savehistory("20160203.r")
```

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

Saving workspace

```
> ls() # your workspace
> save.image("20160203.rd")
> load("20160203.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.

R and 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")
```

Two types of graphical commands: *updating* and *overlaying*.
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="h")
> plot(uspop, type="b")
```

Empty plot with added points and grid

```
> plot(1:20, type="n")
> points(1:20, 1:20, pch=2, col=2)
> grid(5,5)
```

Empty plot() will make a coordinate grid. This is frequently used if you want to construct a complex graphs. points() and grid() are both overlaying commands.

Graphical devices

```
> plot(1:20)
> dev.off()
```

dev.off() will close the current device

PDF graphical device

```
> pdf(file="1.pdf")
> plot(1:20)
> dev.off()
```

PDF format is appropriate for the inclusion in reports, especially if you need to scale images

PNG graphical device

```
> png(file="1.png")
> plot(1:20)
> dev.off()
```

PNG format is more appropriate for the Web pages, it will not scale well.
Avoid `jpg()`!

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How to save current plot into the file

```
> plot(1:20)
> dev.copy(png, "2.png")
> dev.off()
```

The file will not be written on dist until you run dev.off(). On Windows, you may use a menu from graphical window.

Commands to look around

```
> ls() # lists all objects
> str() # shows the structure of object
> head() # shows first rows of table object (data frame)
```
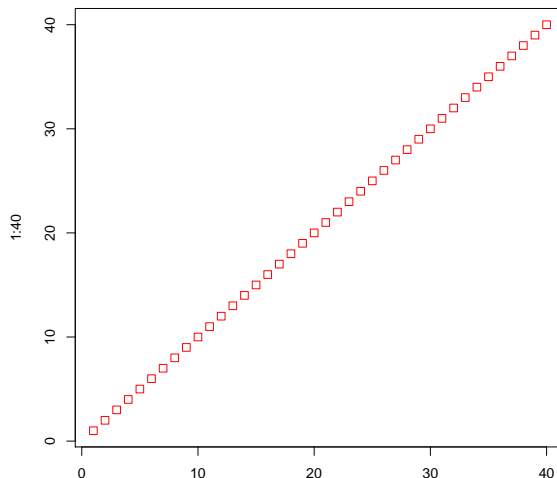
Final question (3 points)

Final question (3 points)

Which command will produce this plot?

Save your commands!

- On Windows and Unix/Linux: `savehistory()` command
- Different on Mac: it is best to save all contents of R console
- The best name for the file is probably "`20160203.r`"

Summary: most important commands

- plot() opens device and draws plots
- str() shows the structure of the R object

For Further Reading

📕

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

📕

A. Shipunov, and many others.
Visual statistics. Use R!
2016—onwards.
Mode of access: http://ashipunov.info/shipunov/
school/biol_240/en/visual_statistics.pdf