

An introduction to R and Tinn-R

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- R is a statistical computer program under the General Public Licence (GPL)
- R provides an environment to perform statistical analyses and visualize data
- R is actually a complete programming language - it implements a dialect of the statistical programming language S

CRAN

- CRAN stands for **C**omprehensive **R** **A**rchive **N**etwork
- CRAN is a network of servers that hosts the base distribution of R and the contributed packages
- central server:
`http://cran.r-project.org`
- latest version of R: 2.6.2
- for Windows, R is available as a precompiled version in the form of a setup-program (R-2.6.2-win32.exe)

Installation

- During the installation of R, the user has the possibility to choose between MDI- or SDI-mode
- MDI: **M**ultiple-**D**ocument **I**nterface
 - different R-Windows are being contained in one master window
 - MDI is the default option when installing R

■ SDI: **S**ingle-**D**ocument **I**nterface

- different R-Windows are independent of each other
- can be selected during the installation process of R
- when R has already been installed:
 - Right-click on the R-icon on the desktop
 - Select Properties
 - Edit the Target field on the Shortcut tab to read

"C:\Program Files\R\R-2.6.2\bin\Rgui.exe --sdi"

- All data and functions (like `*`, `+`, `sin()`, `max()` etc.) in R are **Objects**
- Objects represent either informal datatypes (no explicit class membership) or formal classes
- Informal datatypes: vector, matrix, list, function
- Formal classes: factor, Data frame, Time series, Objects of the class `lm`

Basics

- Objects are also characterised by their **mode**
- The mode indicates which values of a data element can be stored (numeric, character, ...)
- Objects that are generated in R can be "stored" with the help of assignments
- Such objects are placed in the **Workspace**

Basics

- The workspace (with all the objects) can be saved for further usage (filename extension: .Rdata)
- By default, the workspace is saved in the current **Working directory**
- The working directory can be changed using the "File → Change Dir..." menu item

Packages

- (R-) Packages are extensions that provide additional functionality
- Packages can be installed either from CRAN or from a local .zip file; both with the help of the "Packages" menu item
- After a package was successfully installed, it has to be loaded in order to use its functions, datasets etc.

Packages

- A number of important packages is installed automatically when installing R
- Currently there are almost 1400 additional packages available on CRAN

Documentation

- Several manuals that cover important topics regarding the usage of R are automatically installed and can be found in the subdirectory "`...\doc\manuals`" of the folder containing R
- All manuals are also available on the R-homepage:
`http://www.r-project.org`
- As well available on the homepage: A Wiki, a FAQs section, a list of books related to R etc.

Help

- A question mark followed by the name of the function is the simplest way to get help (e.g. `?help`)
- If the exact name of the function, the dataset etc. is not known, `help.search()` can be used
- `help.start()` provides a general overview on documentation and help

- Tinn-R is a program suitable for editing code and running it in R
- Can completely replace the basic editor provided by Rgui
- downloadable at:
`https://sourceforge.net/projects/tinn-R`
- works with all 32-bit Windows versions
- latest version: 1.19.4.7

- newer versions are only compatible with R in SDI-mode (in contrast to the MDI-mode)
- If both Rgui and Tinn-R are running, an additional menu and toolbar are available
- Syntax-highlighting is supported for all files of the S-language (*.R, *.r, *.Q, *.q)