# Introduction of R

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# R language

R language is a kind of prgram language for specialized statistical computing and graphic task. It is referred as an environment or application for R language.

The main task with R is

- Statistical computing (in the academic fields)
- Editing documents including graphical result based on the statitical computation and math symbols.

### Features of R

- Interpreted Language: it is implemented and executed without any previously compiling a program.
  - Prductivity is good such that it is often used to code a test program for statistical computation.
  - The computational speed is relatively slow compared to C or C++.
- Modern computational method is given by R-package.
- Free sofrware is provided.

### Homepage for R



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# The R Project for Statistical Computing

#### **Getting Started**

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. To download R, please choose your preferred CRAN mirror.

If you have questions about R like how to download and install the software, or what the license terms are, please read our answers to frequently asked questions before you send an email.

#### News

- The R Journal Volume 9/2 is available.
- . R version 3.4.3 (Kite-Eating Tree) has been released on 2017-11-30.
- . The R Journal Volume 9/1 is available.
- R version 3.3.3 (Another Canoe) has been released on Monday 2017-03-06.

Figure: URL: http://www.r-project.org

Download and install R.



# Editor for Developing R program

Rstudio is popular editor for R programming.



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Pricing About Us

Infoworld Testing Center recognized RStudio as a 2015 Technology of the Year.

Read more about it!





Powerful IDF for R

RStudio IDE is a powerful and



R Packages

Our developers and expert



Shiny is an elegant and powerful

Bring R to the web

### R studio

- Code editor
- Interface of R-shiny (interactive program on Web)
- Publishing several types of documents.

#### R studio

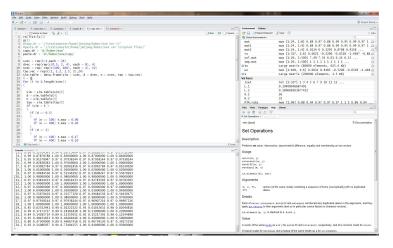


Figure: Screen of R-studio: the screen is splitted by four panels, code script (top-left), console (bottom-left), environment(top-right), help window (bottom right)

### Windows of R-studio

- code script window: the R program is written in this window.
  The script is usually saved by "R source file". Note that the script can be implemented by "ctrl + enter".
- console window: the output is shown in this window. The screen is can be also seen in the shell environment.
- environment window: the objects in R is shown in this window.
  In addition there are several useful panels to switch windows.
- help windows: the file explorer, help documents, graphical result are shown in this window.

### R studio option

- Encoding option: tools → global options → code → saving → Default text encodings (UTF-8).
- ullet Panel layout: tools o global options o panel layout.

# Starting R

- workspace: the space containing R object (data, function, graphic results). Type 'ls()' in colsole window, then you can find the names of r objects in the workspace.
- working directory: the defaul file path used in the workspace.
  Type 'getwd()', then you can check the current working path.
  To change the working directory type 'setwd("path")'. R uses
  '/' to denote the path in the file system. ex) "c:/temp/ranking"
- restoring the workspace: Type 'save.image('"')', then you can restore all information of workspace. To load the workspace, type 'load('"')'. Be careful to overwrite the object with the same name.
- help: type '?...' then you can see the help file about ...

# Install package in R

- Use the package tab in help window. Click the intall button and select the package. The correspondint files are downloaded in a directory.
- To load the package, use 'library('"')'. Then the R objects are loaded in the workspace. But the objects may not shown by 'ls()'. This is because of the management policy of namespace.
- Install "glmnet" and load the library. Type '?glmnet'.

### Importing dataset

- click import data set in environment window.
- click From text(readr).
- input the url (http://archive.ics.uci.edu/ml/machine-learningdatabases/wine/wine.data)
- click the update botton.
- delete the check on "first rows as names" and click the update button.
- click import button.

### **Practice**

- check the dataset in the workspace.
- restore the workspace.
- close the R studio without saving the workspace.
- open the workspace and load the previously restored workspace, and check the workspace again.