Introduction to R and RStudio

**R** is a programming language and software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. R is an integrated suite of software facilities for data manipulation, calculation and graphical display. It includes

- an effective data handling and storage facility,
- a suite of operators for calculations on arrays, in particular matrices,
- a large, coherent, integrated collection of intermediate tools for data analysis,
- graphical facilities for data analysis and display either on-screen or on hardcopy, and
- a well-developed, simple and effective programming language which includes conditionals, loops, user-defined recursive functions and input and output facilities.

The term “environment” is intended to characterize it as a fully planned and coherent system, rather than an incremental accumulation of very specific and inflexible tools, as is frequently the case with other data analysis software. Many users think of R as a statistics system. It is preferable to think of it of an environment within which statistical techniques are implemented. R can be extended (easily) via *packages*. There are several packages supplied with the R distribution and many more are available through the CRAN family of Internet sites covering a very wide range of modern statistics.

The **R** language is widely used among statisticians and data miners for developing statistical software and data analysis. R is an implementation of the S programming language. R was created by Ross Ihaka and Robert Gentleman at the University of Auckland, New Zealand, and is currently developed by the R Development Core Team, of which Chambers is a member. R is named partly after the first names of the first two R authors and partly as a play on the name of S. R is a GNU project. The source code for the R software environment is written primarily in C, Fortran, and R. R is freely available under the GNU General Public License, and pre-compiled binary versions are provided for various operating systems. While R has a command line interface, there are several graphical front-ends available.

**RStudio** is an integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management.

RStudio is available in open source and commercial editions and runs on the desktop (Windows, Mac, and Linux) or in a browser connected to RStudio Server or RStudio Server Pro (Debian/Ubuntu, RedHat/CentOS, and SUSE Linux).

**RStudio** is a free and open-source integrated development environment (IDE) for R, a programming language for statistical computing and graphics. JJ Allaire, creator of the programming language ColdFusion, founded RStudio. Hadley Wickham is the Chief Scientist at RStudio.

RStudio is available in two editions: RStudio Desktop, where the program is run locally as a regular desktop application; and RStudio Server, which allows accessing RStudio using a web browser while it is running on a remote Linux server. Prepackaged distributions of RStudio Desktop are available for Windows, OS X, and Linux.

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RStudio is written in the **C++** programming language and uses the **Qt** framework for its graphical user interface.

Work on RStudio started at around December 2010, and the first public beta version (v0.92) was officially announced in February 2011.
The above descriptions are sourced from:

The R Project for Statistical Computing https://www.r-project.org/
RStudio https://www.rstudio.com/