

What is R?

R is free software under the terms of the Free Software Foundation's GNU General Public License in source code form.^[1] It is a programming language and software environment used for data manipulation, data analysis, statistical computing, statistical analysis and graphics.

R was designed and developed by Ross Ihaka and Robert Gentleman as a dialect of the programming language S. The name "R" is derived from the first letters of the author's name with a wink to S.^[2]

R compiles and runs on Windows, MacOS and a wide variety of UNIX platforms and similar systems (including FreeBSD and Linux).

R has some very good programming features:

- R combines functional with object-oriented programming: you can create functions and objects using R. Functions are a fundamental building block of R.
- R uses packages: a collection of reusable R functions, the documentation that describes how to use them, and sample data. They are stored under a directory called "library" in the R environment. R packages are the fundamental units of shareable, reusable, and reproducible R code.
- R includes database input, exporting data, viewing data, etc.
- R is known as an interpreted language which means that you don't need a compiler to first create a program from your code before you can use it. We can access it through the command-line interpreter.
- R supports the following data structures: vectors, arrays, matrices, lists and data frames which makes it very versatile.

R is a highly extensible language: it offers rich functionality for developers to build their own tools and methods. It can for instance easily be extended via user-created packages available through [CRAN](#) which allow specialised statistical techniques, graphical devices, import/export capabilities, reporting tools (Rmarkdown, knitr, Sweave), etc.

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As R is an open source language you can easily access the source code and add a new feature or bug fix without having to wait for a vendor to do this. It also allows you to integrate with other programming languages and for heavy computational tasks R is often integrated with C, C++ or Fortran. Furthermore, it enables you to interact with many different data sources and other statistical packages (SAS, SPSS).^[3]

If you want to know more about the differences between R, SAS and SPSS: [R vs SAS vs SPSS](#)

R has grown out of the academic world and nowadays many large companies are using R including Uber, Google, Airbnb, Facebook, Microsoft, Twitter, etc. ...

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References

^[1] <https://www.r-project.org/about.html>

^[2] <https://www.techopedia.com/definition/30358/r-programming>

^[3] <https://www.quora.com/What-is-R-programming-language>