

Practising R using swirl

a follow-up to “A (very) short introduction to R”

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1 Introduction

In our (very) short introduction to R (Torfs and Brauer, 2015), you learned the very basics of programming in R. That document is useful for the very first beginning and as a reference, when you forgot how to install a package or get a column from a matrix. However, to really master the programming language, you'll have to practise more than with only the ToDo assignments in the (very) short introduction.

There are many interactive and non-interactive tutorials (google “R tutorial”) to practise. One option is swirl, which “teaches you R programming and data science interactively, at your own pace, and right in the R console” (Swirlstats, 2015a). Swirl was developed in 2013 by the Biostatistics department of Johns Hopkins School of Public Health. Since then, many others have contributed with new courses and the collection keeps expanding.

2 Getting started

On the swirl website www.swirlstats.com, on the tab “Learn”, you'll find the steps you'll have to take to get swirl. Since you've completed the (very) short introduction to R, you already installed R and RStudio, so you can skip the first steps and:

1. Open RStudio.
2. Install the swirl package:
`install.packages("swirl")`
3. Load the package:
`library(swirl)`
4. Start swirl:
`swirl()`

3 Courses

After entering `swirl()`, the program will ask you (interactively) which course you want. After entering your choice, this course is downloaded from the internet, which may take a few minutes.

There are several courses, which consist of modules of 10–20 minutes. A list of courses can be found on the swirl GitHub¹ site (Swirlstats, 2015b).

3.1 R programming

The course “R programming” is a good start because it is the same level as the (very) short introduction to R. It contains the following modules:

1. Basic Building Blocks
2. Workspace and Files
3. Sequences of Numbers
4. Vectors
5. Missing Values
6. Subsetting Vectors
7. Matrices and Data Frames
8. Logic
9. Functions
10. lapply and sapply
11. vapply and tapply
12. Looking at Data
13. Simulation
14. Dates and Times
15. Base Graphics

These modules are ordered logically, but you can change the order or skip modules if you want to learn something specific.

¹GitHub is a web hosting service, used for publishing and sharing code. You'll find many R packages developed by users (see for example Brauer, 2015) – some very sophisticated, others unfinished or badly documented.

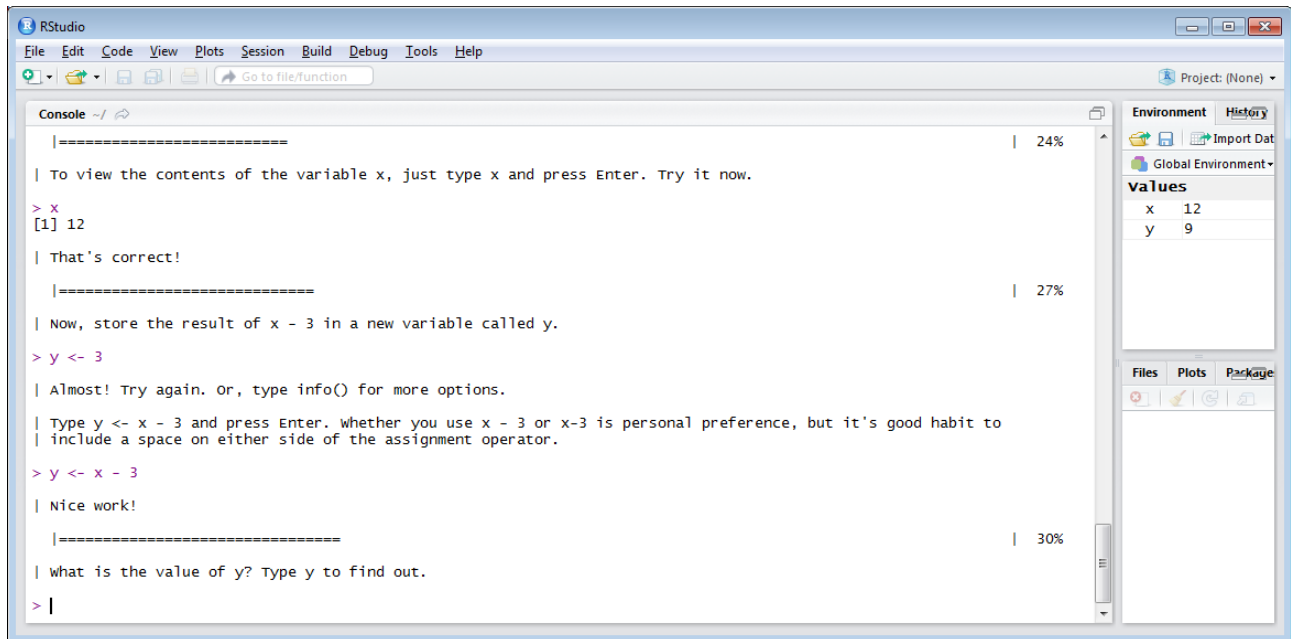


Figure 1: Swirl asks questions and responds to your answer in the command window.

3.2 Other courses

When swirl asks you which course you want, you can choose either “R programming” or “Take me to the swirl course repository!”. Choosing the second opens the GitHub site with the list of courses in a browser. You can look at the options, for example:

1. Data Analysis
2. Open Intro (statistics, data visualisation)
3. Getting and Cleaning Data
4. ...

Once you've found a nice course, you can install it by typing `install_from_swirl("Data Analysis")` in the command window. When you open swirl (by typing `swirl()`), this course is added to the list.

4 Using swirl

When you have chosen a course, swirl will start to explain things and ask you questions in the command window (bottom left). Using swirl is quite straightforward: just do what swirl tells you (Fig. 1). Swirl gives feedback, both after correct and wrong answers. Of course there are many wrong answers possible, so sometimes the feedback is not very specific. Swirl also shows your progress through the module.

5 Final remarks

Different programmers have different styles. For example, in the (very) short introduction, we use `=` to assign variables (e.g. `x = 3`), while swirl really wants you to use `<=`. This may be annoying at first, but it may turn out to be helpful, because it makes it easier for you to read other people's code in the future.

Acknowledgements

We didn't design and program the swirl courses ourselves – we only recommend them. All credit goes to the people who contributed to the swirl projects.

References

- Brauer, C. C., 2015. Home page for WALRUS.
 URL github.com/ClaudiaBrauer/WALRUS
- Swirlstats, 2015a. The official swirl website.
 URL swirlstats.com
- Swirlstats, 2015b. Swirl courses on GitHub.
 URL github.com/swirldev/swirl_courses
- Torfs, P. J. J. F., Brauer, C. C., 2015. A (very) short introduction to R. Contributed to R-project.
 URL cran.r-project.org/doc/contrib/Torfs+Brauer-Short-R-Intro.pdf