

One of the papers you will write in this course requires a curve fit to your performance data. You will use the R open-source statistics software which includes a complete programming language called S for programming statistical computations. By itself, R provides a basic command line interpreter but no integrated development environment (IDE). Another open-source project called RStudio is an IDE built just for R and includes a source editor and debugger. This document describes how to download and install R and RStudio. Separate documents describe how to access and use some prewritten R scripts to analyze and plot your performance data.

1. *To install R*

Go to the R project site

<http://www.r-project.org/>

and choose your preferred Comprehensive R Archive Network (CRAN) mirror.

## 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**.

2. Pick a CRAN mirror close to you, for example, the one at UCLA.

USA	<a href="http://star-www.st-andrews.ac.uk/cran/">http://star-www.st-andrews.ac.uk/cran/</a>	St Andrews University
	<a href="http://cran.cnr.Berkeley.edu">http://cran.cnr.Berkeley.edu</a>	University of California, Berkeley, CA
	<a href="http://cran.stat.ucla.edu/">http://cran.stat.ucla.edu/</a>	University of California, Los Angeles, CA
	<a href="http://streaming.stat.iastate.edu/CRAN/">http://streaming.stat.iastate.edu/CRAN/</a>	Iowa State University, Ames, IA

3. Download the version of R for your computer.

### The Comprehensive R Archive Network

**Download and Install R**  
Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- [Download R for Linux](#)
- [Download R for MacOS X](#)
- [Download R for Windows](#)

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

[Source Code for all Platforms](#)

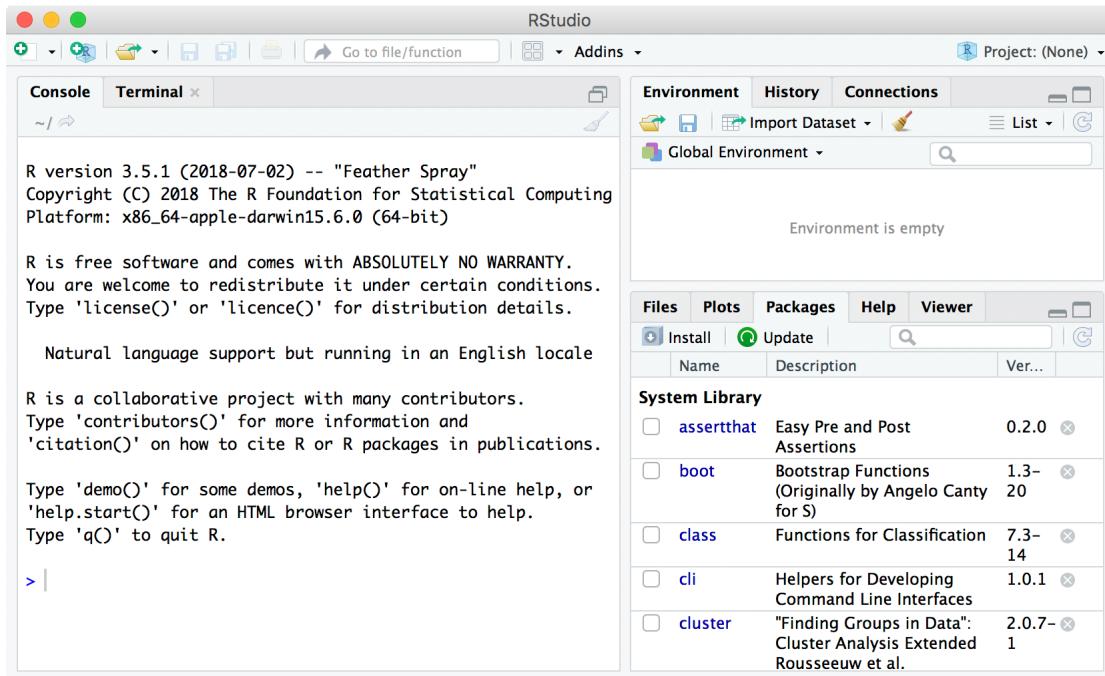
After downloading R, install it on your computer. The steps will vary depending on what kind of computer you have. Whether installing on Windows or Mac, download the latest release version of R and accept all the default options.

#### 4. To install RStudio

Go to the RStudio project site

<http://www.rstudio.com/>

Navigate to the Downloads page and download the latest release version of the RStudio Desktop application (not the server). To verify the installation startup RStudio, which will automatically invoke the R console and present it in the pane on the left side of the IDE.



#### 5. To practice with the console

You should now learn the syntax and a few of the basic commands of the R language using the RStudio IDE. There are many tutorials online. Here is one that introduces the basic data types of R.

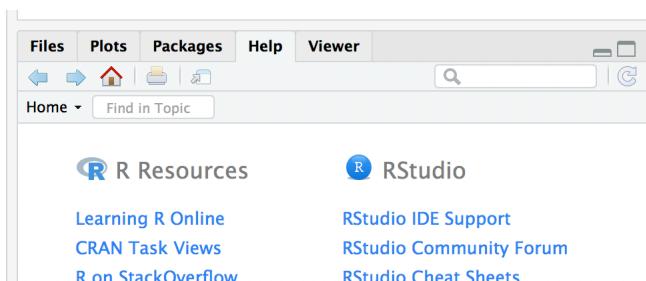
<http://www.r-tutor.com/r-introduction>

I recommend that you experiment with the R console in parallel as you work through the lessons. R is a powerful object-oriented language, and we now teach it in the introductory programming class.

Two other documentation resources are this documentation on the RStudio web site

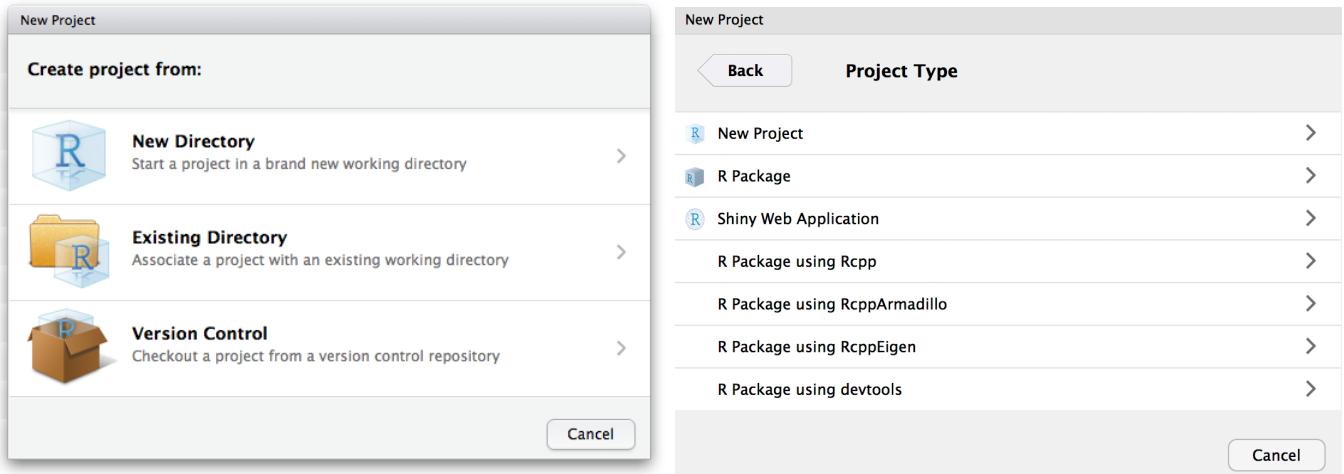
<https://support.rstudio.com/hc/en-us/sections/200107586-Using-RStudio>

and the manuals under the Help tab in the RStudio application.

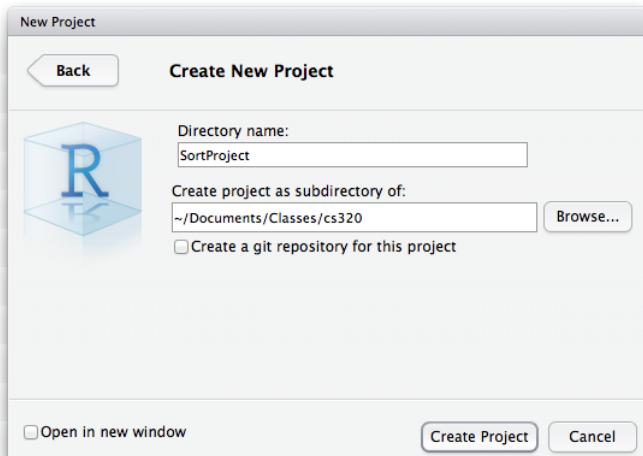


6. *To setup your sorting project*

In RStudio, select File → New Project. In the New Project dialog box, select Create project from: New Directory. For Project Type, select New Project.



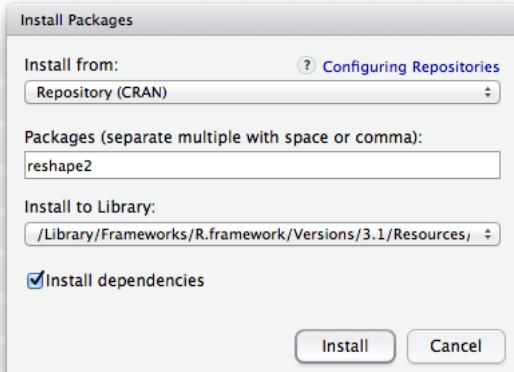
Name your project **SortProject** in a file directory of your choosing.



See the document “Data management in RStudio” for how to enter your sorting data into an R data frame and manipulate it.

7. *To install required packages*

To plot your data with the supplied scripts, you must install package `reshape2` from CRAN. In the lower right pane of RStudio, select the Packages tab and click the Install button. In the resulting dialog box, enter `reshape2` in the Packages field.



Click the Install button. The messages in the Console should confirm that the package and its dependencies are installed.

Repeat the above procedure for the package `ggplot2`.