Installing R

CS109L - Autumn 2014

March 27, 2015

R can be downloaded from the Comprehensive R Archive Network (CRAN) at http://cran.r-project.org/. Most users will want to download and install the binary version linked from the top of the web page. This is a version that has been translated (by compilers) into machine language for execution on a particular type of computer with a particular operating system. R is designed to be very portable: it will run on Microsoft Windows, Linux, Solaris, Mac OSX, and other UNIX based operating systems, but different binary versions are required for each.[1]

For your convenience, here are some installation instructions to get you started. Let me know if there are any issues or questions with installing R!

1 Downloading R

1.1 Downloading R for Windows

Go to http://cran.r-project.org/bin/windows/base/ and click on the link *Download R 3.1.3 for Windows* at the top of the page. Run the downloaded executable and follow the installation instructions. Somewhere along the way, you may be asked to pick a working directory for R. Don't worry too much about this; you can always change it later. Use the default if the installer gives you one. Once the program has installed, you will have a shortcut to `Rgui.exe` on your desktop and/or somewhere on the Start menu file tree, and perhaps also in the Quick Launch part of the task bar. You're done!

1.2 Downloading R for Mac OSX

Go to http://cran.r-project.org/bin/macosx/ and click on the link (R 3.1.3) that matches the version of your operating system (if you aren't sure what version of OSX your Mac is running, click on the Apple symbol in the task bar, then *About This Mac*). Open the downloaded file and follow the installation instructions. Once installed, you should have `R.app` in your Applications folder. You're done!

1.3 Downloading R for Linux

The installation instructions will depend on which Linux distribution you run: go to http://cran.r-project.org/bin/linux/ and choose the subdirectory that matches your Linux distribution. There will be detailed instructions to

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[1]If you would like to try and install R from source, feel free to read the official installation documentation at http://cran.r-project.org/doc/manuals/R-admin.html and take a stab at it. If you don't know what installing from source means, you most likely don't want to do this.

follow for each distribution that you can follow to finish the installation. If you need any help, feel free to shoot me an email and I can help take a look at it.

2   Installing Packages

R comes preloaded with a library of core language features (known as the *base distribution*) that provides R with its primary functionality. A large community of R developers also contributes add-on packages that extend the basic functionality of R by loading additional functions and datasets. A list of all contributed R packages hosted on CRAN can be found at http://cran.r-project.org/web/packages/.

During an R session, installed packages may be loaded with the `library()` function. You may think of an R package as the analog of what you `#include` in C++: `<iostream>`, `<string>`, and `<vector>`, for example. Don't be confused by the jargon. In C++, everything you `#include` is a library, whereas in R, a library contains packages that you can load into your R session.

When you start an R session, certain core packages are automatically loaded from the default library.

```
> getOption('defaultPackages')
[1] "datasets" "utils" "grDevices" "graphics" "stats" "methods"
```

Others must be loaded manually.

```
> library()     # list all packages in your library
> library("MASS") # loads the MASS package
```

To install contributed R packages to your library from CRAN, you may use R's built-in function `install.packages(pkgname)` during an R session. On most GUI systems, `install.packages()` will allow packages to be selected from a boxed list.

```
> install.packages("combinat")
> library("combinat")
```

Throughout the quarter, we will be using various add-on packages. Remember that you must install these packages before you can load them into an R session using the commands above.

3   R Development Environments

Windows and Mac users downloading the binary version of R will also receive a GUI which can be used as a coding environment. While the GUI will work just fine for the course and beyond, if you'd like to download a nicer looking editor, there are some options below to help you out. We will be using RStudio for the quarter, but any of the options (including the default GUI) will work just fine.

3.1   RStudio

RStudio is a great IDE which, according to the website, "combines an intuitive user interface with powerful coding tools to help you get the most out of R". I will be developing in RStudio this quarter, so expect it to be the best supported. You can download the IDE from http://www.rstudio.org.

3.2 ESS

Emacs Speaks Statistics (ESS) is an add-on package for emacs text editors designed to support editing of scripts and interaction with various statistical analysis programs, including `R`. Although all users are welcome to apply ESS, advanced users or emacs enthusiasts are likely to benefit from it the most. Linux and Mac users interested in using ESS can find installation instructions and documentation at http://ess.r-project.org/.

3.3 StatET

For the eclipse lovers out there. StatET is an Eclipse plugin that gives you just about all of the features you'd want in an `R` IDE and can be downloaded from http://www.walware.de/goto/statet/.