

# Installation of R, of R packages, and Editor Environments

John Maindonald

April 24, 2007

## Contents

<b>1</b>	<b>Installation</b>	<b>1</b>
<b>2</b>	<b>R under Windows</b>	<b>1</b>
2.1	Editor interfaces under Windows . . . . .	2
2.2	The Tinn-R Interface to R (MS Windows) . . . . .	2
<b>3</b>	<b>R under Mac OSX</b>	<b>4</b>
<b>4</b>	<b>R under Unix and Linux</b>	<b>4</b>

## 1 Installation

Most users (Windows, MacOS X and some flavours of Linux) will be able to install R from binaries (mainly, this involves placing a directory tree in an appropriate place). These (or source files, if needed) are available from a CRAN (Comprehensive R Archive Network) site. For Sweden, use <http://ftp.sunet.se/pub/lang/CRAN/>. Download and install the relevant binary.

The use of an editor interface to gives additional functionality. The most powerful and versatile of these is the ESS<sup>1</sup> interface to the somewhat cryptic Emacs or XEmacs editor. Other commonly used editors are platform specific. Details are given under the relevant OS name.

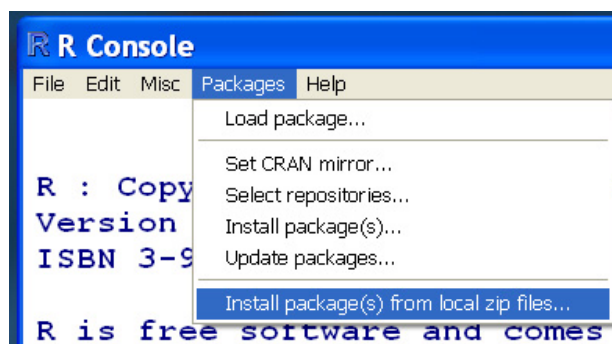
FAQs for R, for R MacOS X, and for R for Windows, can be accessed from this same web page.

## 2 R under Windows

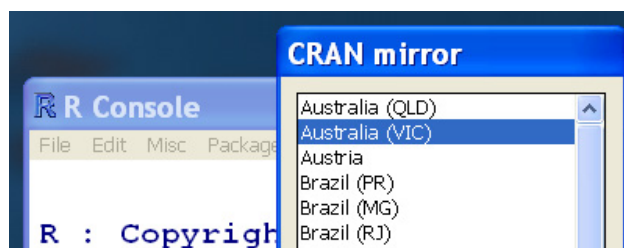
The installing of R packages, additional to those included in the initial installation, is conveniently done from the Packages menu item, under R.

This describes the loading of packages from the internet, and assumes a live internet connection. Two internet repositories should be noted – CRAN (Comprehensive R Archive Network) and Bioconductor (for Bioinformatics packages).

The menu shown is for the Packages main menu item. On or prior to first use of the menu for downloading and installing packages from the CRAN, it will be necessary to set the CRAN mirror. For this, see below. If Bioconductor is required rather than CRAN, use the Select repositories... menu item to make the change.



This shows the first few items in the long list of CRAN mirror sites. In Australia, select Australia (QLD) or Australia (VIC).



Alternatively, packages can be installed from a local drive (hard drive, or external drive or CD) to which they have been copied. Select the Install package(s) from local zip files ... menu item, then navigate to the directory that holds the zip file(s), select those that are to be installed, and press the ENTER key.

<sup>1</sup><http://ess.r-project.org/>

## 2.1 Editor interfaces under Windows

Consider use of the Tinn-R editor. Go to (<https://sourceforge.net/projects/tinn-r>; see also [www.sciviews.org/Tinn-R/](http://www.sciviews.org/Tinn-R/)).

For Tinn-R, create an R icon that starts R with the SDI interface. Set the working directory (under Target, in the Shortcut tab of Properties) to the directory that you intend to use for the course. Details are on page 2 of this document.

Another possibility is to install Emacs or XEmacs and ESS, See <http://socserv.mcmaster.ca/jfox/Books/Companion/ESS/>

## 2.2 The Tinn-R Interface to R (MS Windows)

### Desktop Shortcut for Starting R in SDI Mode

Under MS Windows, the Tinn-R editor gives an attractive and feature-rich access to R. For this, R needs to run in SDI (single display interface) mode. Limitations of the SDI interface, relative to the default MDI interface, are more than compensated by the additional functionality provided by Tinn-R.

It is convenient to have at least one icon (a desktop shortcut) that starts R in SDI mode. Note also that the startup directory should be changed from the default. For the course **C:\r-course** is suggested, but any name is possible. A good strategy is to create a new working directory for each new project. Each can have its own icon and if desired there can be different startup modes.

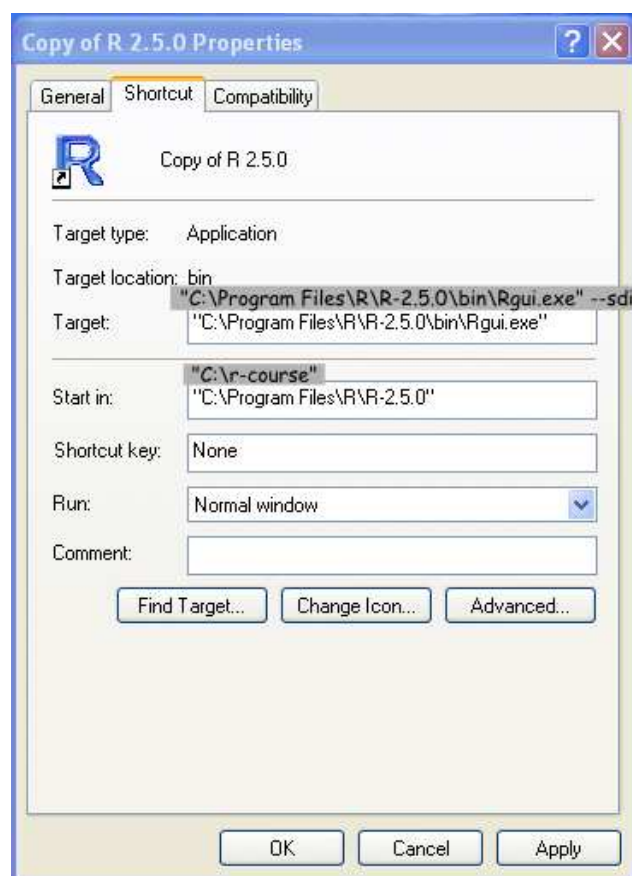


Right click on the R icon. Left click on Copy. Then right click somewhere on the desktop where there is no icon, and click on Paste. This should create a copy of the icon, with a name that starts Copy of ... .

Right click on the copy and click on Properties. Note that this is the Properties display for my setup. There may be differences between different setups, depending on the version of R and where it has been installed. The display assumes R-2.5.0, which at the time of writing is not yet released. Thus you have the choice of using R-2.4.1 or R-2.5.0dev. The development version (R-2.5.0dev) of R-2.5.0 should be fine.

Click on Shortcut and find the Target field. Add `--sdi` following the final double quotes. The entry that should now be placed in the target field has been superimposed immediately above the target field. Add `--sdi` to the right of the existing field.

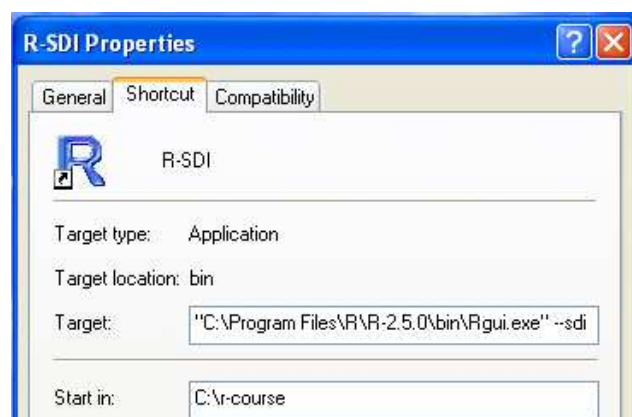
If **C:\r-course** will be the working directory, make this the name in the Start in field. Otherwise, change to whatever directory name is required.



Here is the R-SDI icon. To the right of the icon is the upper part of the Preferences—Shortcut tab for the R-SDI icon, once the changes above have been made and the icon has been renamed.



In general, a disconnect between the directory name and the icon name may be undesirable. With multiple working directories and multiple icons, both the icon name and the directory name should have a mnemonic connection with the project name.



## Interface to Tinn-R

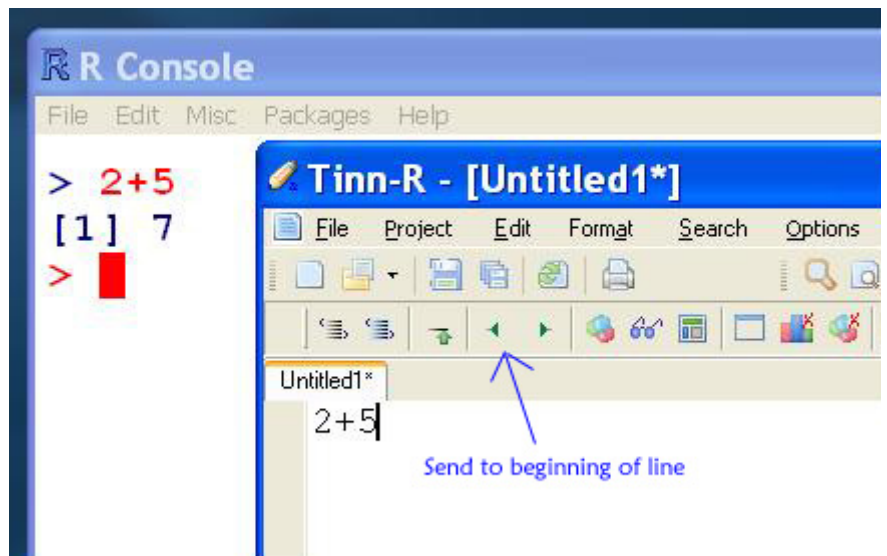
Download tinn-R from <https://sourceforge.net/projects/tinn-r> and install it.

Start Tinn-R, and start R-SDI (it is immaterial which is started first). Click on **File** on the text menu at the top of the Tinn-R window, and select **New**. This creates a file window, with the name **Untitled1\***, as shown in the image.

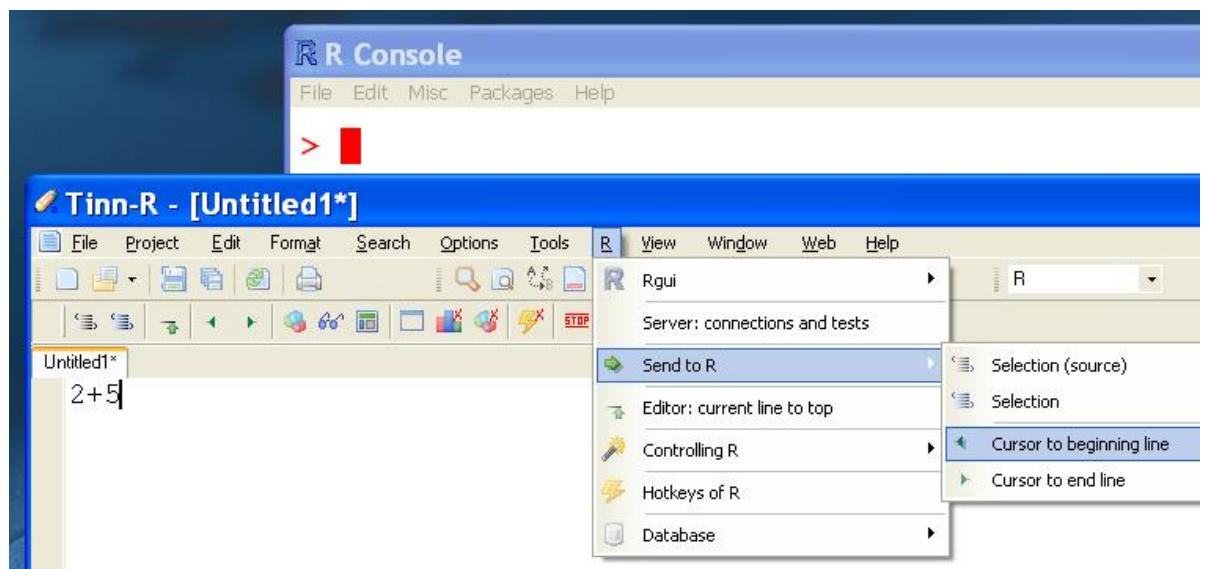
Into the window just created, type, e.g., `2+5`. Ensure that the cursor is at the end of the line, immediately following the `5`. Click on the **Send to beginning line** icon. This sends `2+5` to R, which executes the calculation.

Alternatively, the cursor might be placed at the beginning of the line, then clicking on the **Send to end line** icon (next on the right). A third possibility is to select the whole line, and click the **Send selection** icon, which the second icon in the row of icons that are shown.

Explanatory text appears when the mouse pointer hovers on an icon.



The relevant menu item can alternatively be used to send code to R.



This shows the use of a relevant menu item to send code to R.

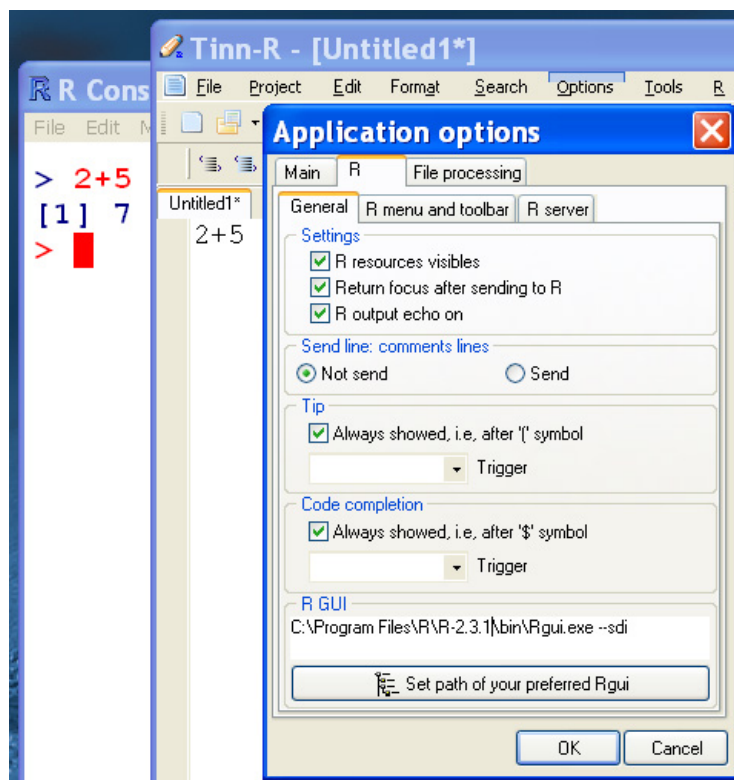
Hotkeys can be defined for common (or any) actions, if required. Click on **R**, then on **Hotkeys of R**.

Tinn-R is a feature-rich editor. Few users will want to use all of its rich variety of features.

## Multiple R processes

If more than one R process is running at the same time, it may be desirable to check that R is interfacing with the desired process, and if not make a change.

Click on Options, then on Applications, then on the R tab. Observe that the path for the R GUI is given on the third line from the bottom.



### 3 R under Mac OSX

The binary installs a Unix version that can be run from the command line, plus a MacOS X application that runs R from a Cocoa-based Gui. Fire up the application, explore the menu system, and note its features. The editor is fairly basic, but does have syntax highlighting. The menu has abilities, superior to those on the Windows GUI, for checking what packages and versions have been installed and for installing and upgrading packages.

For running R from the Unix command line, or via the ESS interface as an Emacs/XEmacs process, installation of X11 and X11User.pkg (from Xcode Tools) is recommended. For ESS, go to <http://ess.r-project.org/>.

Recommended Emacs/XEmacs ports are: Aquaemacs at <http://sourceforge.net/projects/aquamacs/> (Mac-like user interface), XEmacs at <http://sourceforge.net/projects/xemacs/> (Graphical user interface support), or GNU Emacs at <http://homepage.mac.com/zenitani/emacs-e.html> ("pure" Emacs, with Mac-friendly features). Other possibilities are described at <http://www.emacswiki.org/cgi-bin/emacs-en/EmacsForMacOS>

### 4 R under Unix and Linux

For R binaries, see <http://cran.ms.unimelb.edu.au/bin/linux/>. For Unix and some flavours of Linux, it will probably be necessary to compile the R source. This is straightforward providing that you have the needed compilers, etc. Check the R FAQ at <http://cran.ms.unimelb.edu.au/doc/FAQ/R-FAQ.html>.

For GNU Emacs, go to <http://www.gnu.org/software/emacs/> For XEmacs, go to <http://www.xemacs.org/> Alternatives to the Emacs/XEmacs editor include Kate, under either the KDE or the Gnome Window manager.