R/RStudio Setup Guide

This document details the step-by-step installation of R package, used for statistical computing and RStudio (IDE), one of the free and open source integrated development environment for R. These software packages can be downloaded from http://www.r-project.org/ and http://rstudio.org/ respectively and are available on the Windows, Linux and Mac OS X platforms. However, this guide will only include the installation for the Windows platform. Please refer to the above websites for further instructions.
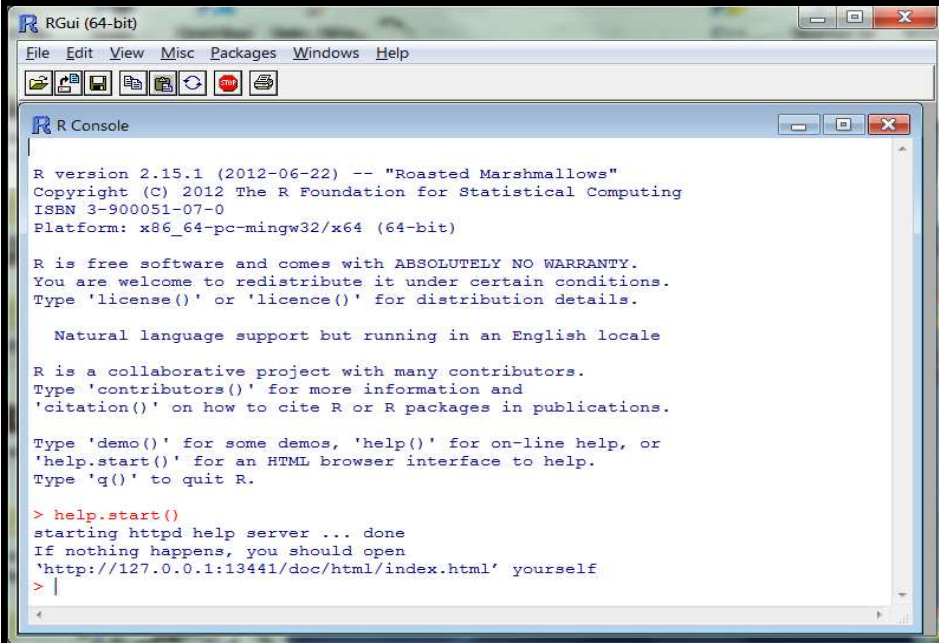
It must be noted that the R-Scripts can run without the installation of the IDE, using R-Console, and students are free to use any other IDE for R if they wish to do so.

Prerequisites for RStudio
- Any version of R (2.11.1 or higher)

Installation of R on a Windows 7 operating system
1. Download the latest precompiled binary distributions from CRAN website [http://www.r-project.org/]
2. Only the **base** package is required for this installation. (*At the time of writing the latest version of R is R-2.15.1)*
3. Follow the instructions on the website to complete the installation of R
4. Once completed, launch RGui from the shortcut. Or you can locate RGui.exe from your installation path. The default path for Windows is "C:\Program Files\R\R-2.15.1\bin\x64\Rgui.exe"
5. Type help.start() at the R-Console prompt and press Enter. If you can see the help server page then you have successfully installed and configured your R package (See screenshot below),

Installation of RStudio IDE on Windows 7 operating system

1. Download the latest version of RStudio IDE for your Windows platform from http://rstudio.org/download/desktop *(At the time of writing the latest available version of RStudio is v0.96)*
2. Start the installation and follow the steps required by the Setup Wizard
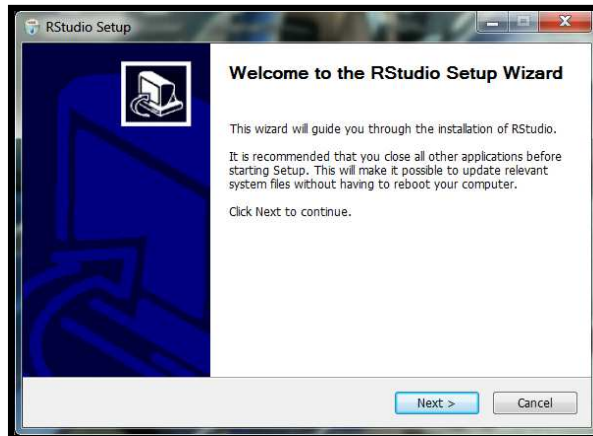

3. Once completed, launch RStudio IDE from Start -> All Programs-> RStudio -> RStudio.exe or from your custom installation directory. The default installation directory for RStudio IDE is "C:\Program Files\RStudio\bin\rstudio.exe"
4. Type help.start() at the RStudio prompt and press Enter. If you can see the following screen then you have successfully installed and configured RStudio IDE to run with R.
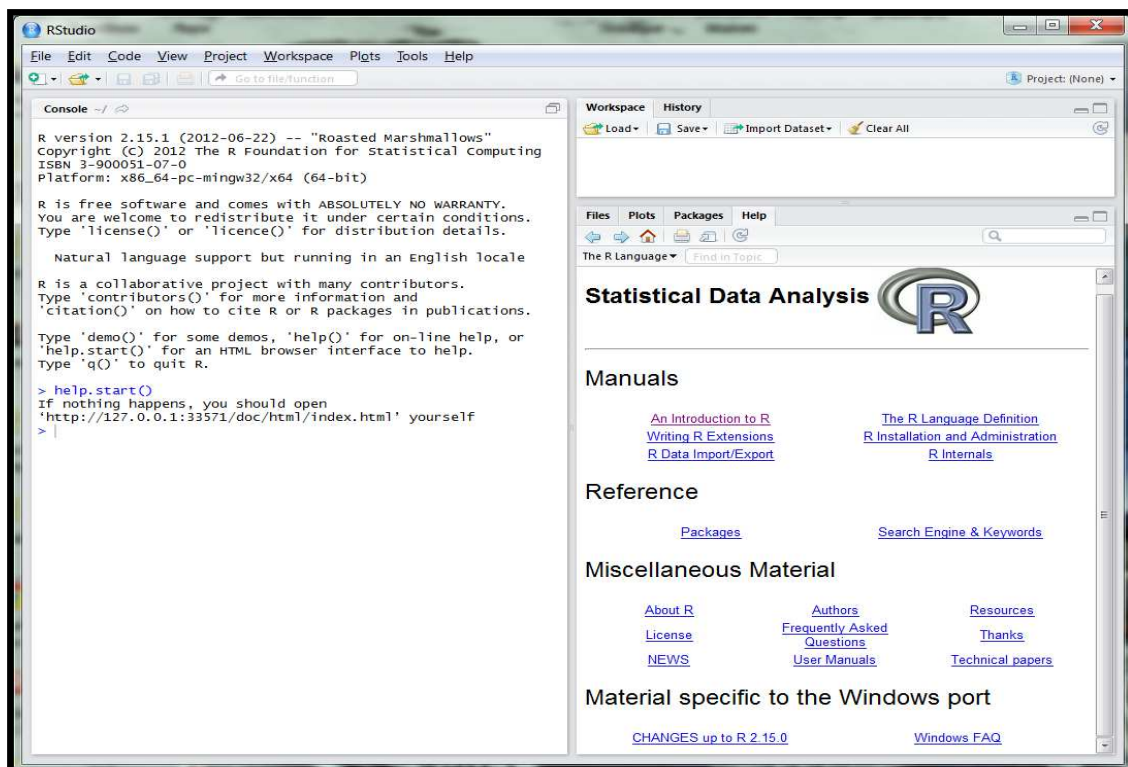
5. Download all R-Scripts from [**INSERT BOOK WEBSITE LINK HERE**]
6. Extract/Unzip all R-Scripts to a folder location you want. For example "C:\EMTS\R\"

7. All R-Scripts make use of the required utility functions implemented by EMTSUtil.R. Make sure that this file exists in your extracted directory and make sure you have installed the required packages/library for the text book exercises. These can be found in section below (*see Installing additional packages with RStudio IDE*).

8. Set your working directory to your R-scripts using the command,
   `setwd(dir)` For example, `setwd("C:\EMTS\R")`

   Alternatively you can use RStudio's Tools Menu: Tools -> Set Working Directory -> Choose Directory...
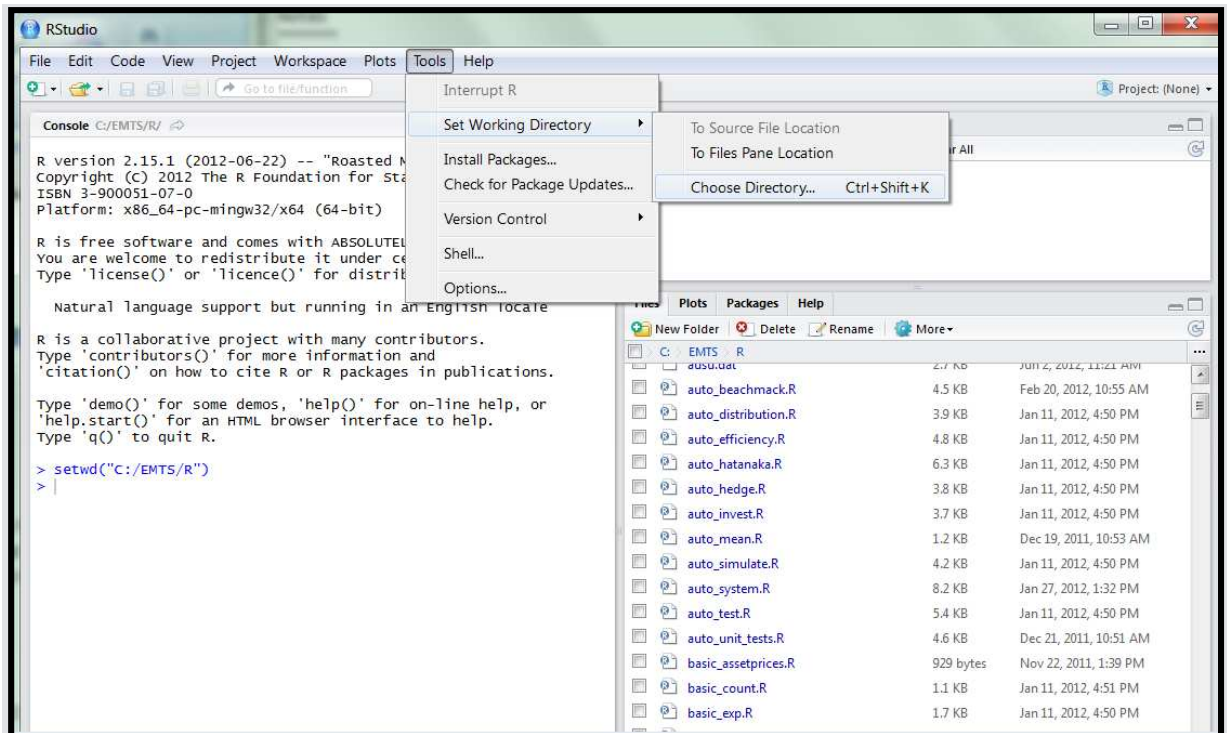
9. To run a script, open the script in RStudio's script editor and choose "Source" from the menu or the following command at the Console prompt,

```
> source('C:/EMTS/R/stsm_simulate.R')
> stsm_simulate()
```
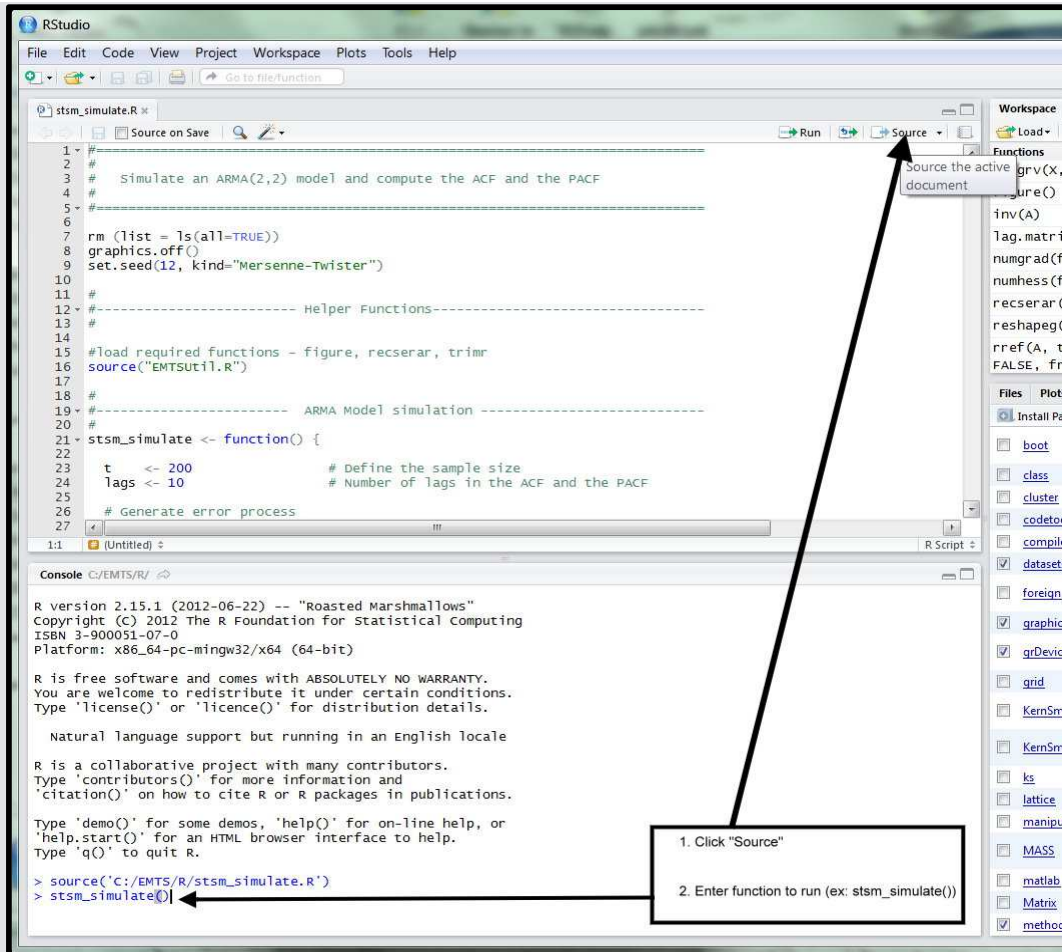
If you can see the results below then you have successfully configured RStudio IDE with R and the required packages for the exercises of the book. If not, please go through steps 4-9 again.
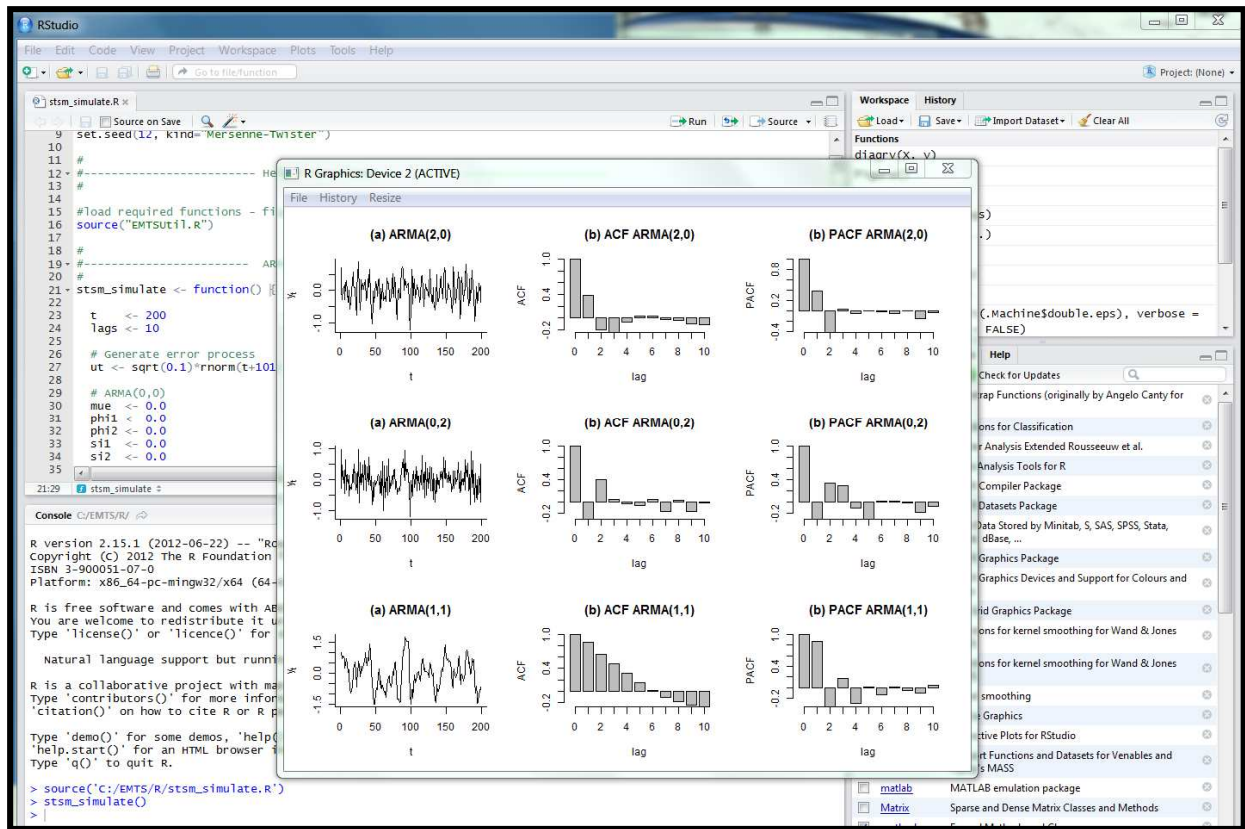
Installing additional packages with RStudio IDE

The following is a list of the additional packages for the EMTS book,

- scatterplot3d
- ks
- matlab
- numDeriv
- nlme
- KernSmooth

All required packages can be downloaded from the CRAN Repository or installed directly, along with any dependencies, by issuing the following command,

install.packages("scatterplot3d") at the R-Console or RStudio IDE prompts.

For further options please refer to R Documentation (?install.packages).

Alternatively, you can easily install each of these packages using RStudio IDE by clicking the "Install Packages" button of the IDE and you will be asked to create a personal library directory (See screenshot),
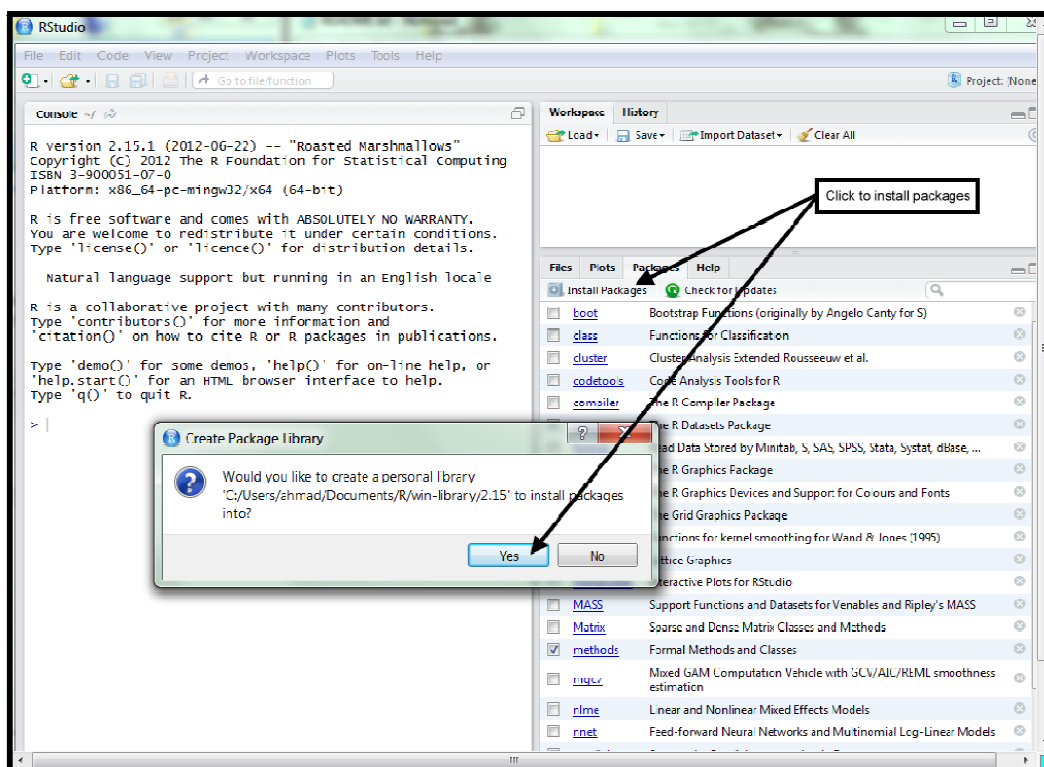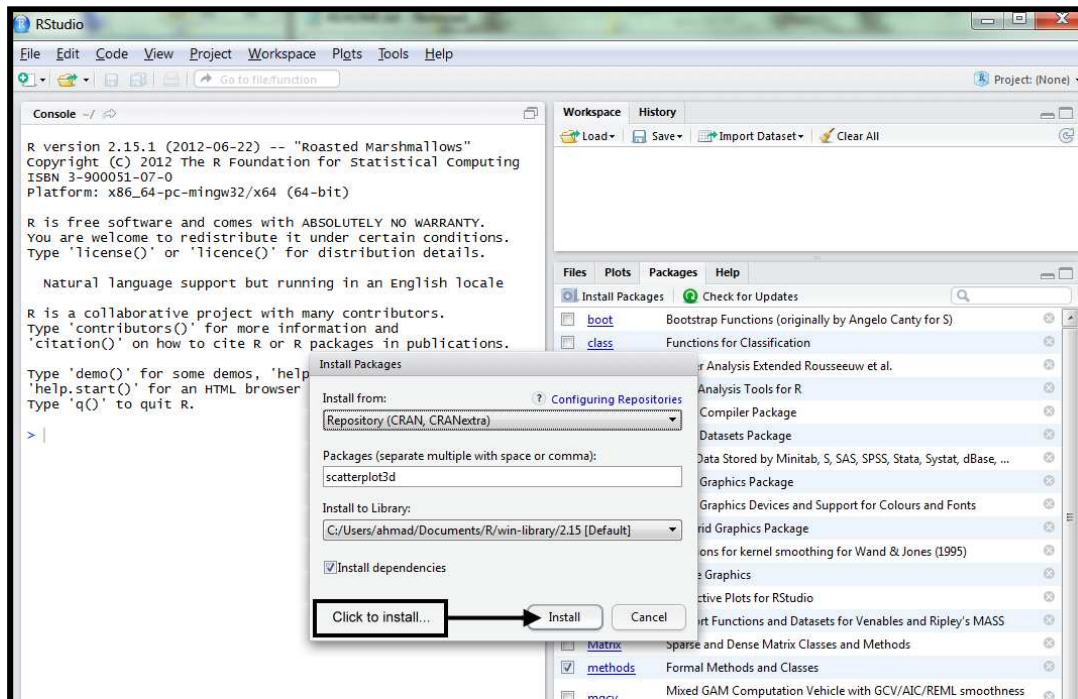
Repeat the above steps to install the remaining packages or alternatively you can run the following script at the Console prompt,

```
> source('C:/EMTS/R/setup/installAll.R')
```

Note: the installAll.R script is located in R/setup/ folder.