



# R Installation

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國立陽明交通大學醫學院醫學系家庭醫學科  
台北榮民總醫院家庭醫學部  
台北榮民總醫院醫學研究部大數據中心

# Topics

- Install R
- Install Rtools
- Install RStudio
- Install tidyverse package
- Update packages
- Install Notepad++

# 需聯上網路下載軟體，安裝套件(package)時亦需聯上網路  
# 安裝稍微耗時，務必於上課前安裝完成 !!!

SECTION I

**R**



# The R Project for Statistical Computing

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## Download

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## R Project

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## R Foundation

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## 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](#).

If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

## News

- [R version 3.2.3 \(Wooden Christmas-Tree\)](#) has been released on 2015-12-10.>
- [The R Journal Volume 7/1](#) is available.
- [R version 3.1.3 \(Smooth Sidewalk\)](#) has been released on 2015-03-09.
- [useR! 2015](#), took place at the University of Aalborg, Denmark, June 30 - July 3, 2015.

<https://cran.r-project.org/mirrors.html>  
選擇從國立台灣大學的mirror site下載

Sweden	<a href="https://ftpmirror1.infania.net/mirror/CRAN/">https://ftpmirror1.infania.net/mirror/CRAN/</a> <a href="https://ftp.acc.umu.se/mirror/CRAN/">https://ftp.acc.umu.se/mirror/CRAN/</a>	Infania Networks Academic Computer Club, Umeå University
Switzerland	<a href="https://stat.ethz.ch/CRAN/">https://stat.ethz.ch/CRAN/</a>	ETH Zürich
Taiwan	<a href="https://cran.csie.ntu.edu.tw/">https://cran.csie.ntu.edu.tw/</a>	National Taiwan University, Taipei
Thailand	<a href="http://mirrors.psu.ac.th/pub/cran/">http://mirrors.psu.ac.th/pub/cran/</a>	Prince of Songkla University, Hatyai
Turkey	<a href="https://cran.pau.edu.tr/">https://cran.pau.edu.tr/</a> <a href="https://cran.gedik.edu.tr/">https://cran.gedik.edu.tr/</a> <a href="https://cran.ncc.metu.edu.tr/">https://cran.ncc.metu.edu.tr/</a>	Pamukkale University, Denizli Istanbul Gedik University Middle East Technical University Northern C
UK	<a href="https://www.stats.bris.ac.uk/R/">https://www.stats.bris.ac.uk/R/</a> <a href="https://cran.ma.imperial.ac.uk/">https://cran.ma.imperial.ac.uk/</a>	University of Bristol Imperial College London



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## 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](#)

### Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- The latest release (2012-03-30, Easter Beagle): [R-2.15.0.tar.gz](#), read [what's new](#) in the latest version.
- Sources of [R alpha and beta releases](#) (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are [available here](#). Please read about [new features and bug fixes](#) before filing corresponding feature requests or bug reports.
- Source code of older versions of R is [available here](#).
- Contributed extension [packages](#)

### Questions About R

- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

What are R and CRAN?

R is 'GNU S', a freely available language and environment for statistical computing and graphics which provides a wide variety of statistical and graphical techniques: linear and non-linear modelling, statistical tests, time series analysis, classification, clustering, etc. Please consult the [R project homepage](#) for further



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## R for Windows



Subdirectories:

[base](#)

Binaries for base distribution (managed by Duncan Murdoch). This is what you want to [install R for the first time](#).

[contrib](#)

Binaries of contributed packages (managed by Uwe Ligges). There is also information on [third party software](#) available for CRAN Windows services and corresponding environment and make variables.

[Rtools](#)

Tools to build R and R packages (managed by Duncan Murdoch). This is what you want to build your own packages on Windows, or to build R itself.

Please do not submit binaries to CRAN. Package developers might want to contact Duncan Murdoch or Uwe Ligges directly in case of questions / suggestions related to Windows binaries.

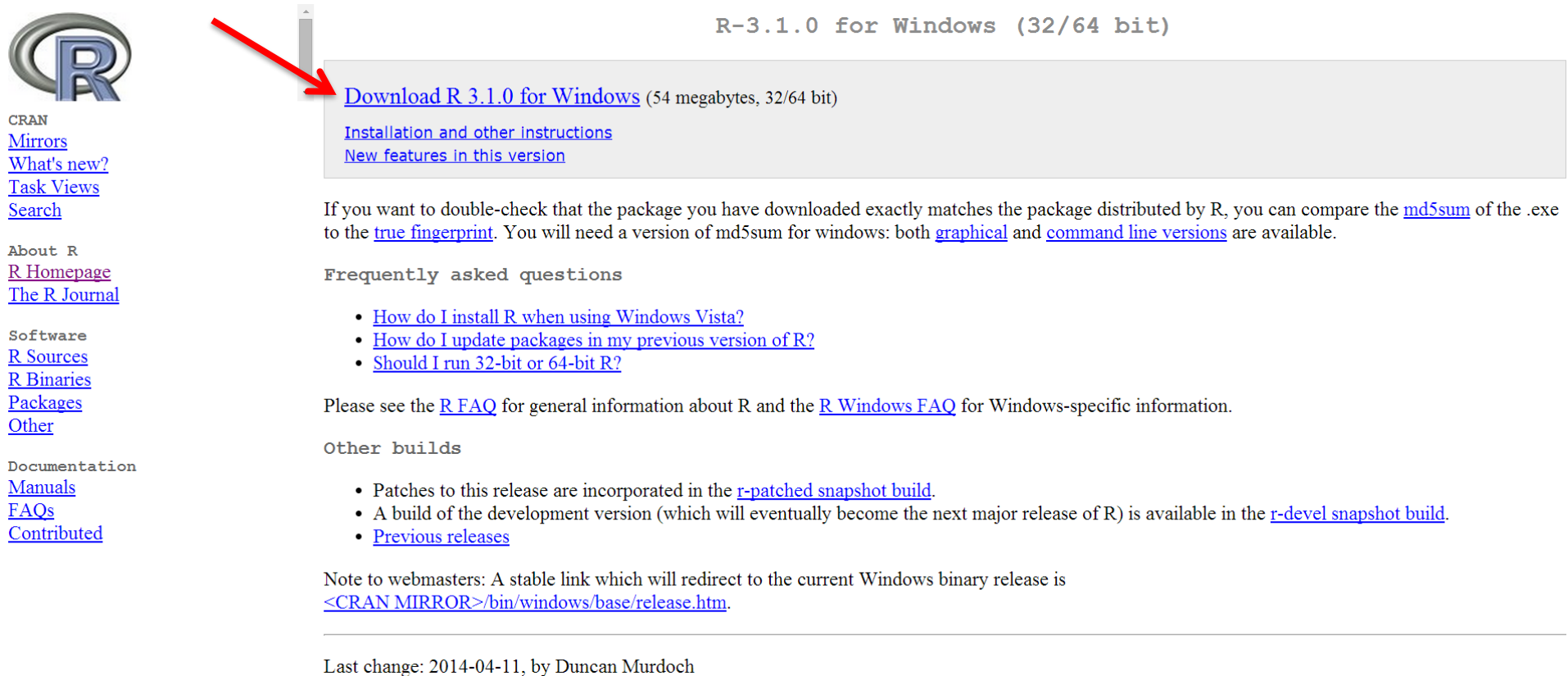
You may also want to read the [R FAQ](#) and [R for Windows FAQ](#).


Note: CRAN does some checks on these binaries for viruses, but cannot give guarantees. Use the normal precautions with downloaded executables.

<https://cran.csie.ntu.edu.tw/>

=> download R-4.X.X-win.exe (2021年4月初的版本為4.0.5)

=> install (by accepting defaults)



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R-3.1.0 for Windows (32/64 bit)

[Download R 3.1.0 for Windows](#) (54 megabytes, 32/64 bit)

[Installation and other instructions](#)  
[New features in this version](#)

If you want to double-check that the package you have downloaded exactly matches the package distributed by R, you can compare the [md5sum](#) of the .exe to the [true fingerprint](#). You will need a version of md5sum for windows: both [graphical](#) and [command line versions](#) are available.

Frequently asked questions

- [How do I install R when using Windows Vista?](#)
- [How do I update packages in my previous version of R?](#)
- [Should I run 32-bit or 64-bit R?](#)

Please see the [R FAQ](#) for general information about R and the [R Windows FAQ](#) for Windows-specific information.

Other builds

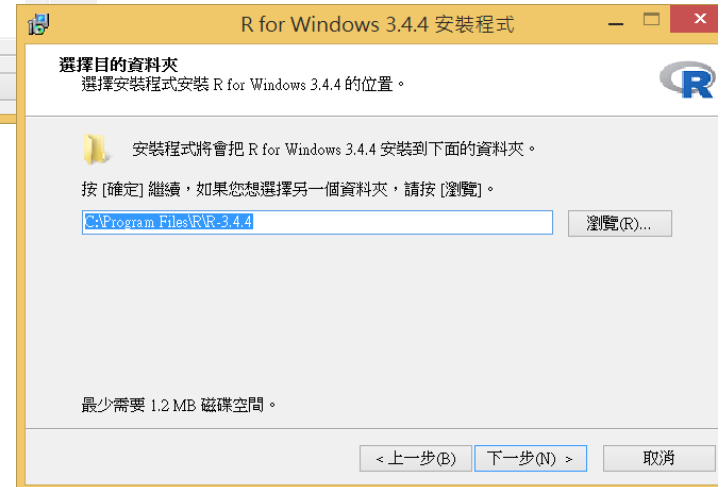
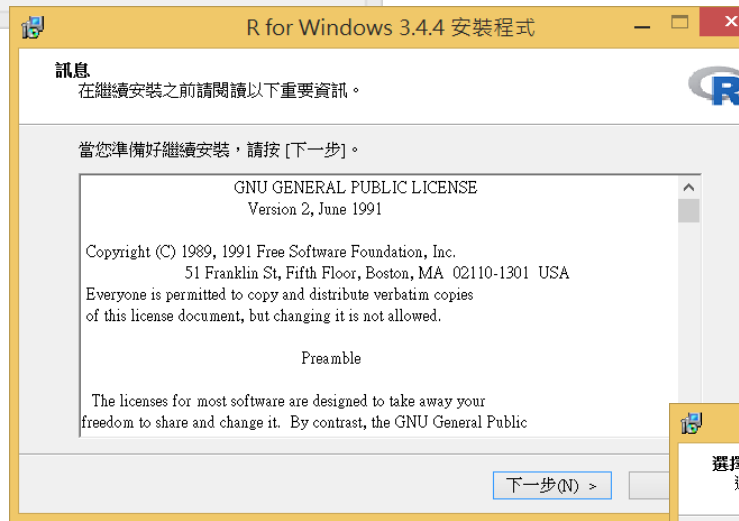
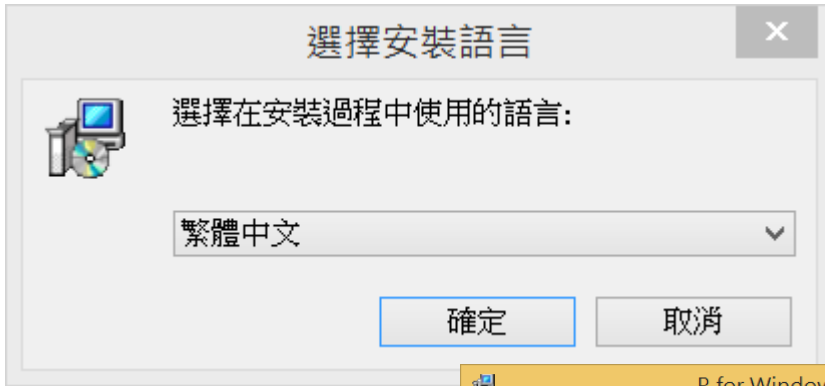
- Patches to this release are incorporated in the [r-patched snapshot build](#).
- A build of the development version (which will eventually become the next major release of R) is available in the [r-devel snapshot build](#).
- [Previous releases](#)

Note to webmasters: A stable link which will redirect to the current Windows binary release is [<CRAN MIRROR>/bin/windows/base/release.htm](#).

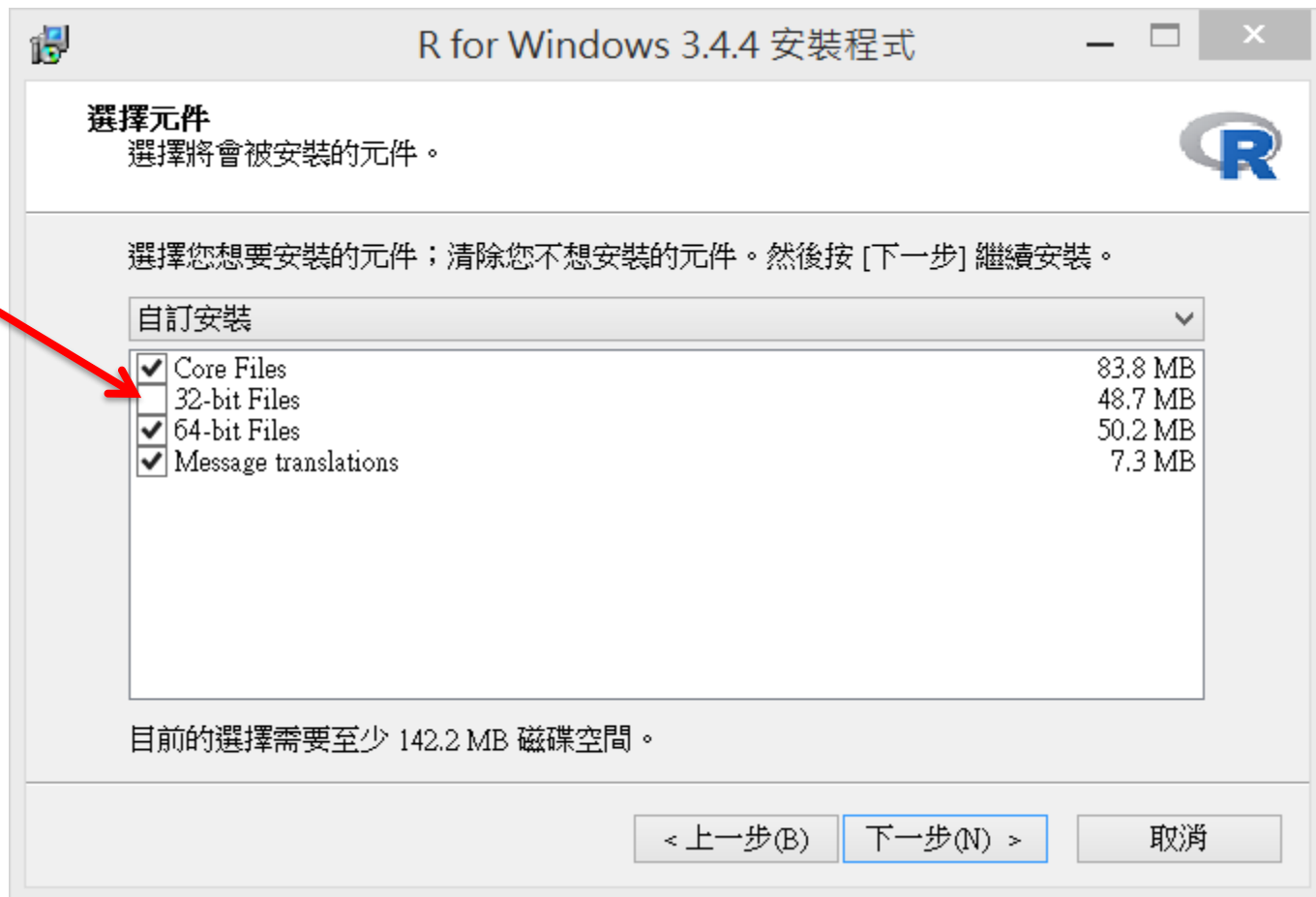
---

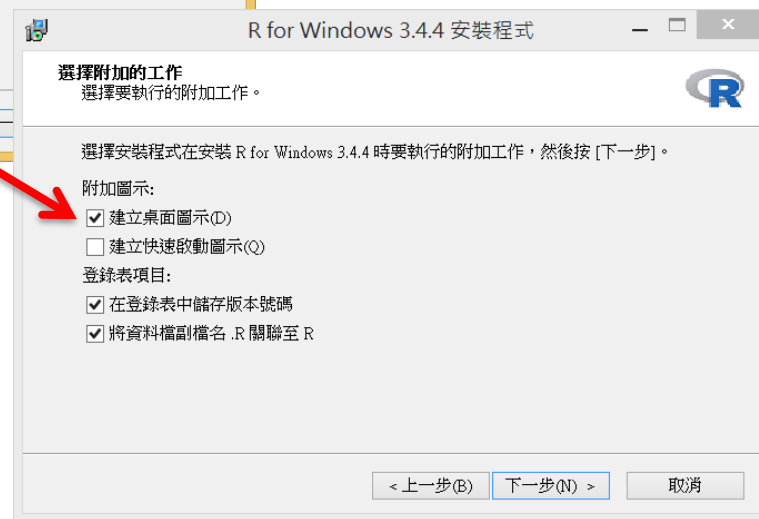
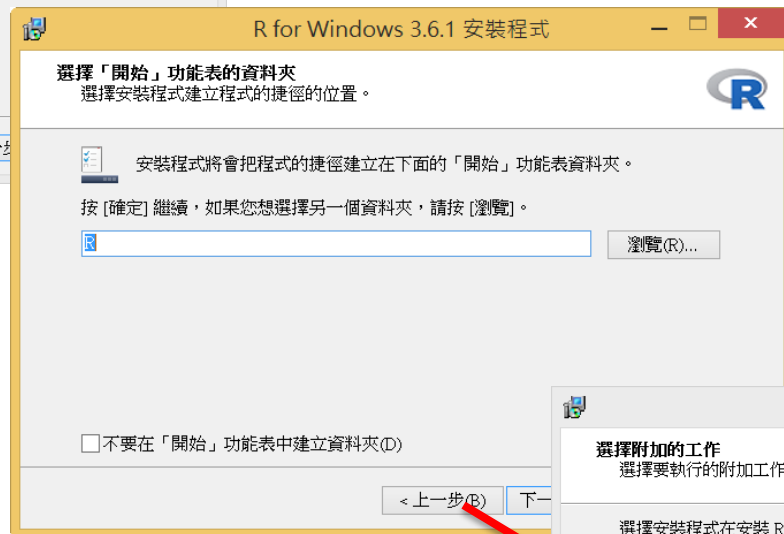
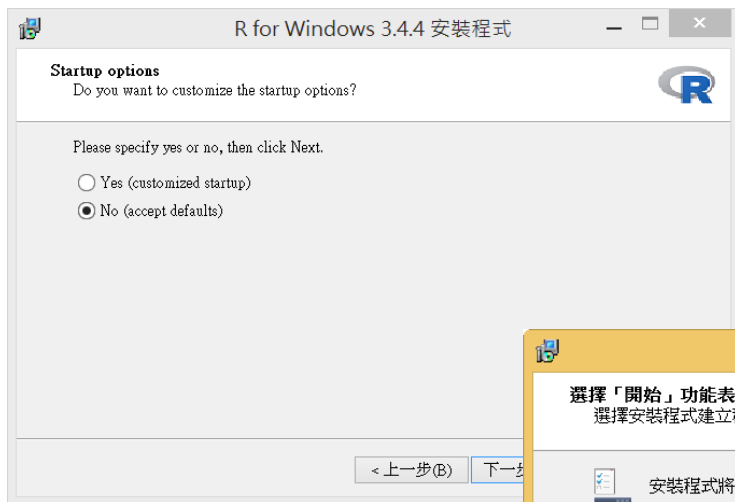
Last change: 2014-04-11, by Duncan Murdoch



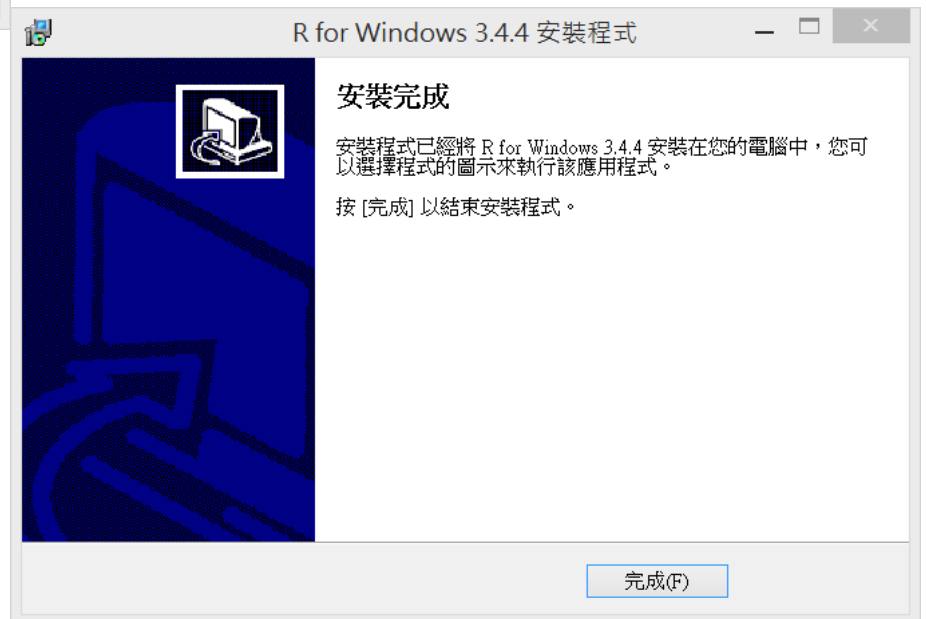
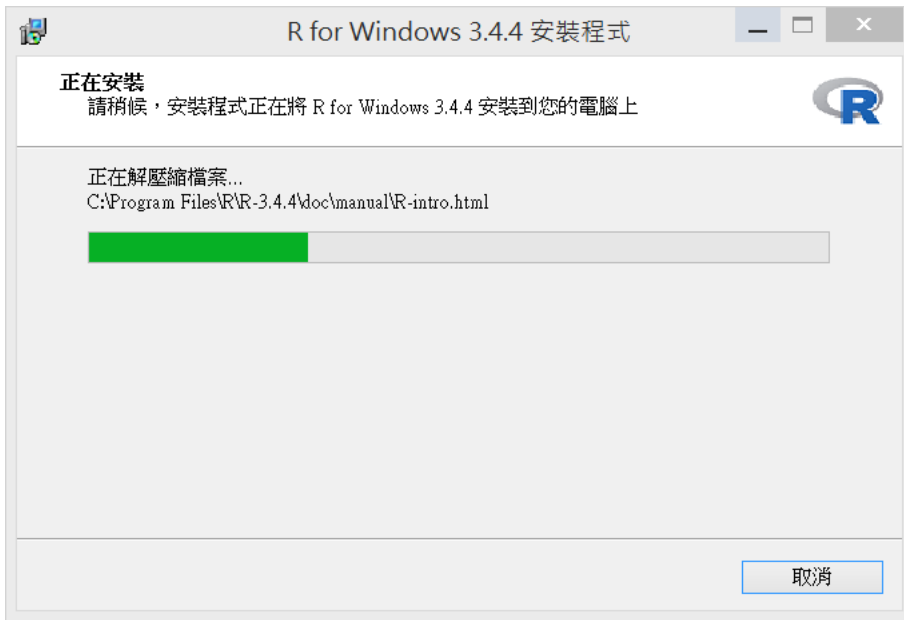


只需安裝64位元即可 => deselect (去勾選) 32-bit Files





勾選 建立桌面圖示(D)



# 方法一

## 以系統管理員身分執行 R

(之後安裝套件的位置才較不會被更換至不同目錄處)

(之後安裝或更新套件時才不會出問題)

每次執行時，在桌面上點選 R 圖示後按滑鼠右鍵 => 以系統管理員身分執行(A)



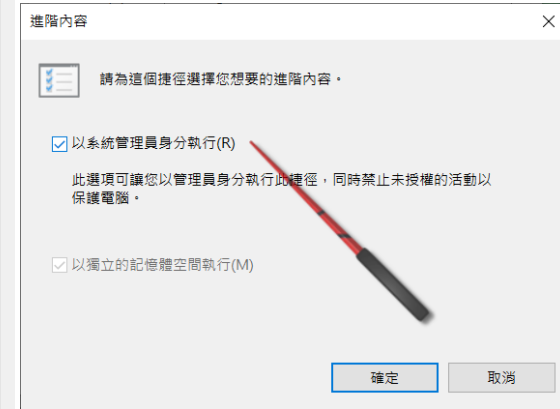
## 以系統管理員身分執行 R

# 方法二

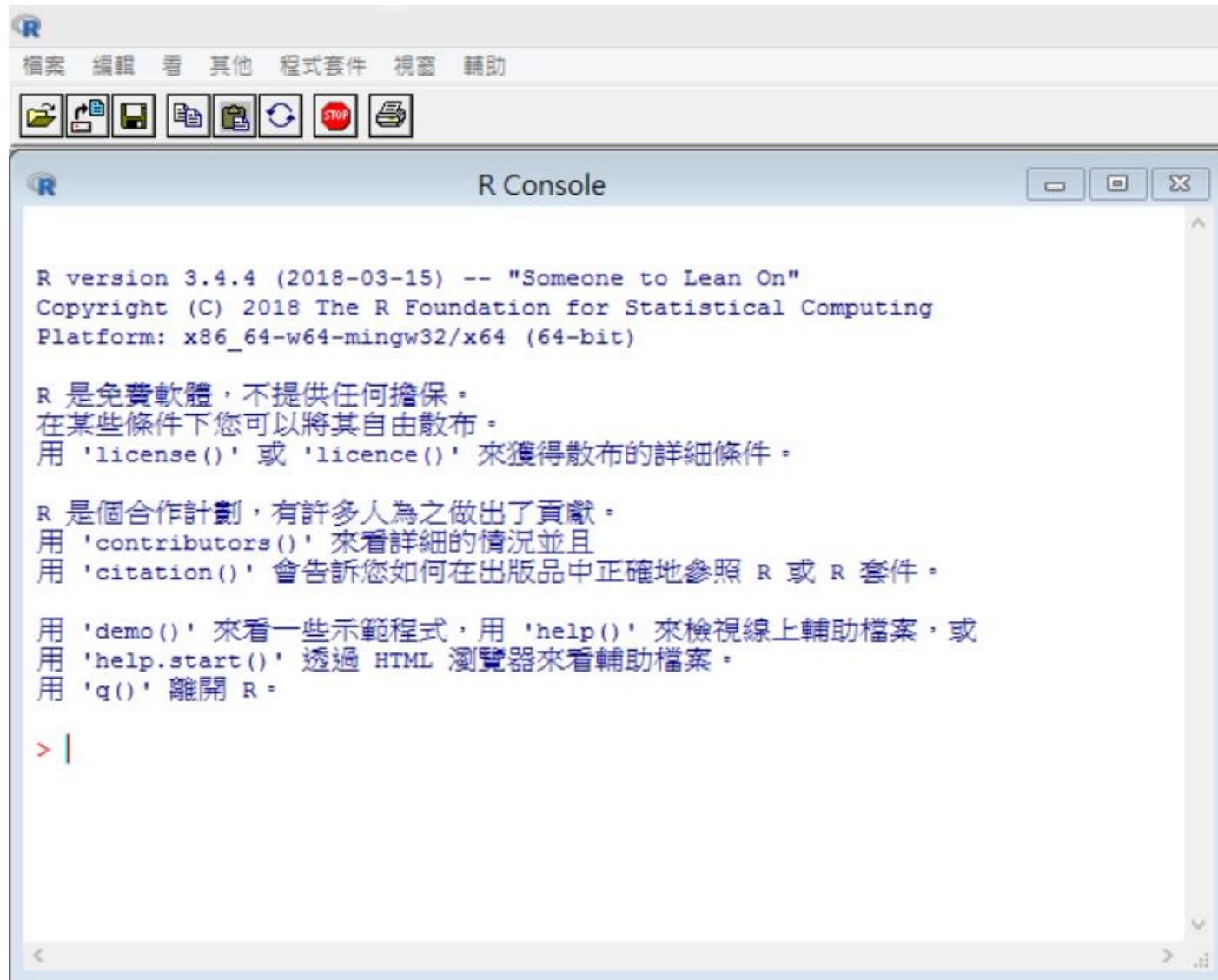
\* 先設定：在桌面上點選 R 圖示後按滑鼠右鍵 => 內容(R) =>

[R x64 ... - 內容] 點選 進階(D)... => [進階內容] 勾選 V 以系統管理員身分執行(R)

\* 之後每次開啟R時，會問 [使用者帳戶控制] 視窗，同意[是]即可



## Screen at start ( R Console 控制台)



The screenshot shows the R Console window with the following text:

```
R version 3.4.4 (2018-03-15) -- "Someone to Lean On"  
Copyright (C) 2018 The R Foundation for Statistical Computing  
Platform: x86_64-w64-mingw32/x64 (64-bit)  
  
R 是免費軟體，不提供任何擔保。  
在某些條件下您可以將其自由散布。  
用 'license()' 或 'licence()' 來獲得散布的詳細條件。  
  
R 是個合作計劃，有許多人為之做出了貢獻。  
用 'contributors()' 來看詳細的情況並且  
用 'citation()' 會告訴您如何在出版品中正確地參照 R 或 R 套件。  
  
用 'demo()' 來看一些示範程式，用 'help()' 來檢視線上輔助檔案，或  
用 'help.start()' 透過 HTML 瀏覽器來看輔助檔案。  
用 'q()' 離開 R。  
  
> |
```

## 變更字體大小

=> 編輯 / GUI 偏好設定... / [Rgui 配置編輯器] size

The image shows the R GUI configuration editor window. The 'Font' section is expanded, showing a list of font sizes. A red arrow points to the 'size' dropdown menu, which is currently set to 10. The list of font sizes includes 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 32, and 36. The '14' option is highlighted. A red arrow also points to the 'GUI 偏好設定...' option in the R editor's menu.

**Rgui 配置編輯器**

Single or multiple  MDI  SDI  MDI toolbar  MDI statusbar

Pager style  multiple windows  single window Language for menus and messages

Font   TrueType only size  style

Console rows  columns  Initial left  top  lines

set options(width) on resize?  
 buffer console by default?

Pager rows  columns  Cursor blink

Graphics windows: initial left  top

Console and Pager Colours

background	wheat2
normaltext	wheat3
usertext	wheat4
pagerbg	white

Apply Save... Load... OK Cancel



<https://cran.r-project.org/manuals.html>

可下載 官方參考文件



## Manual

## R-release

## R-patched

## R-devel

**An Introduction to R** is based on the former "Notes on R", gives an introduction to the language and how to use R for doing statistical analysis and graphics.

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

**R Data Import/Export** describes the import and export facilities available either in R itself or via packages which are available from CRAN.

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

## R Installation and Administration

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

**Writing R Extensions** covers how to create your own packages, write R help files, and the foreign language (C, C++, Fortran, ...) interfaces.

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

A draft of **The R language definition** documents the language *per se*. That is, the objects that it works on, and the details of the expression evaluation process, which are useful to know when programming R functions.

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

**R Internals:** a guide to the internal structures of R and coding standards for the core team working on R itself.

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

[HTML](#) | [PDF](#) | [EPUB](#)

**The R Reference Index:** contains all help files of the R standard and recommended packages in printable form. (9MB, approx. 3500 pages)

[PDF](#)

[PDF](#)

[PDF](#)

SECTION II

# **RTOOLS**

https://cran.csie.ntu.edu.tw/

偶而有些R套件需要先以Rtools編譯後，才能夠安裝  
所以先行下載與與安裝Rtools軟體

問題



Do you want to install from sources the packages which need compilation?

是(Y)

否(N)

取消



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Subdirectories:

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[Rtools](#)

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You may also want to read the [R FAQ](#) and [R for Windows FAQ](#).

Note: CRAN does some checks on these binaries for viruses, but cannot give guarantees. Use the normal precautions with downloaded executables.

## R for Windows

<https://cran.csie.ntu.edu.tw/bin/windows/Rtools/>

=> download `rtoolsXX-x86_64.exe` (2021年4月初的版本為`rtools40-x86_64.exe`)

=> install (by accepting defaults)

## Using Rtools40 on Windows

Starting with R 4.0.0 (released April 2020), R for Windows uses a brand new toolchain bundle called **rtools40**.

This version of Rtools upgrades the mingw-w64 gcc toolchains to version 8.3.0, and introduces a new build system based on [msys2](#), which makes easier to build and maintain R itself as well as the system libraries needed by R packages on Windows. For more information about the latter, follow the links at the bottom of this document.

*This documentation is about rtools40, the current version used for R 4.0.0 and newer. For information about previous versions of Rtools that can be used with R 3.6.3 or older, please visit [this page](#).*

### Installing Rtools40

---

Note that rtools40 is only needed build R packages with C/C++/Fortran code from source. By default, R for Windows installs the precompiled “binary packages” from CRAN, for which you do not need rtools!

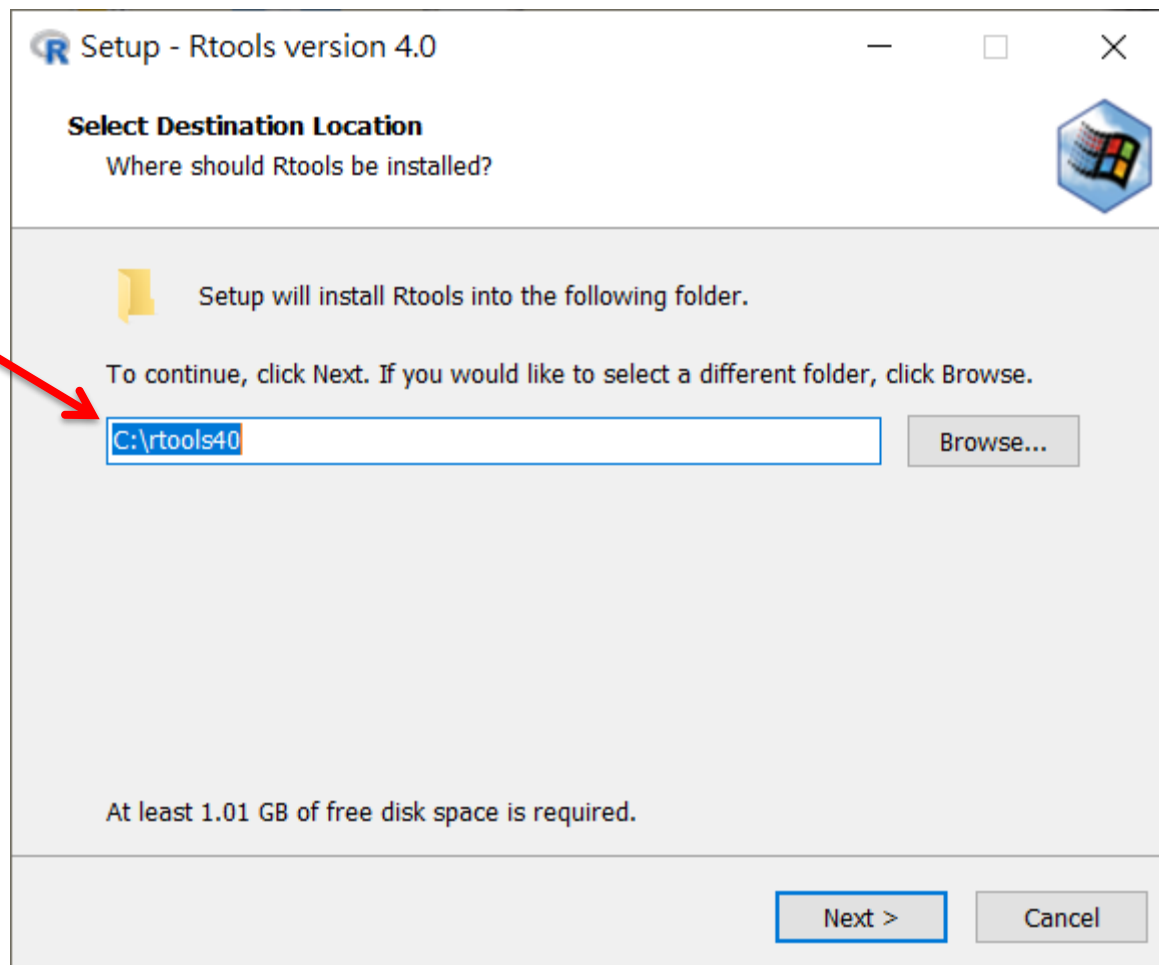
To use rtools40, download the installer from CRAN:

- On Windows 64-bit: [rtools40-x86\\_64.exe](#) (recommended: includes both i386 and x64 compilers)
- On Windows 32-bit: [rtools40-i686.exe](#) (i386 compilers only)

**Note for RStudio users:** please check you are using the latest version of RStudio (at least 1.2.5042) to work with rtools40.

按右鍵 以系統管理員身分執行 rtoolsXX-x86\_64.exe 。

安裝時，請使用預設路徑(C:\rtools40)。如果選擇其他路徑，將來安裝R套件時，可能會有找不到"C:/rtools40/mingw32/bin/g++.exe"的異常狀況。



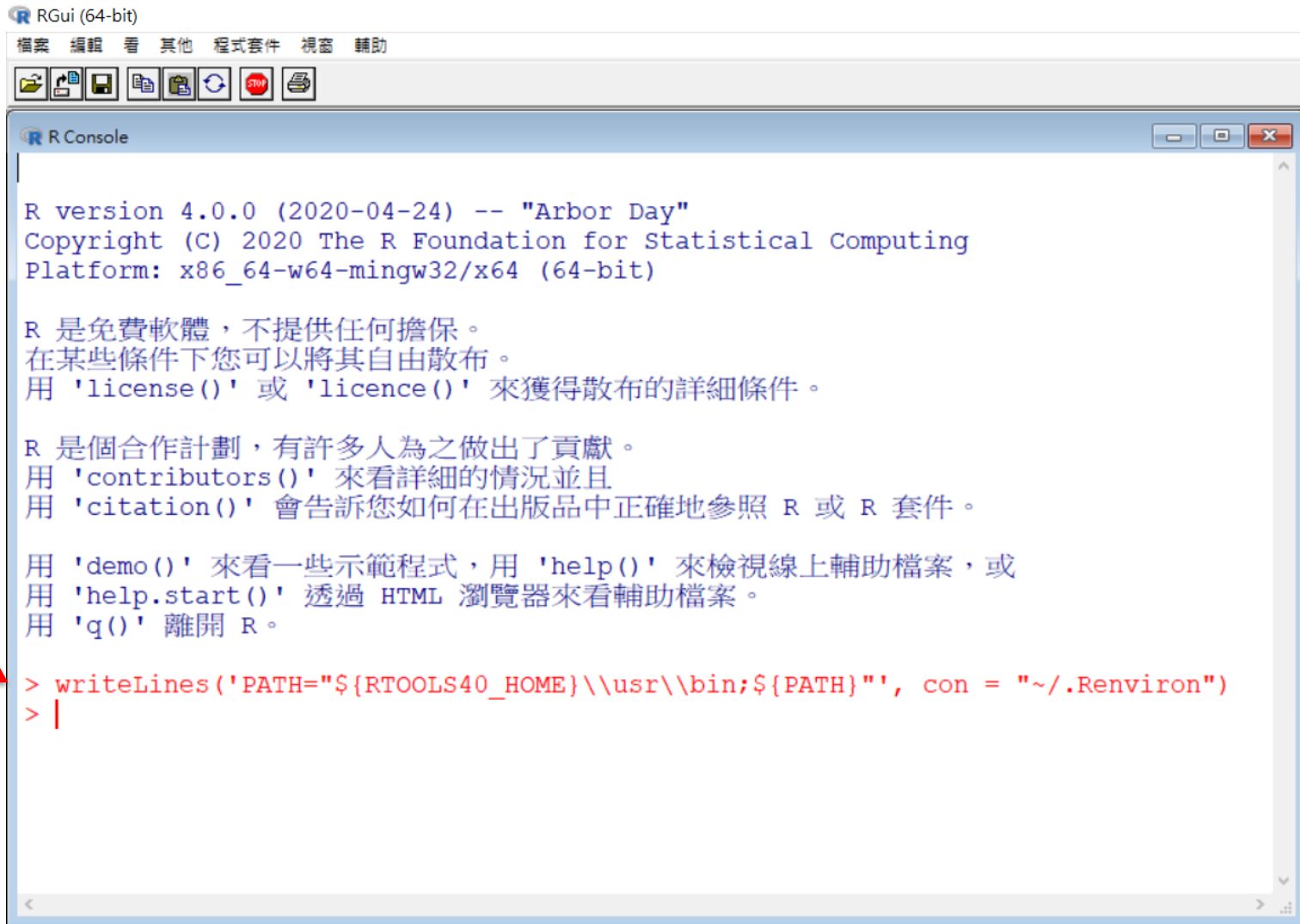
## Putting Rtools on the PATH

安裝完畢後，還需請在系統檔案設定路徑，讓電腦知道在哪裡呼叫程式。

在R Console處執行

```
writeLines('PATH="${RTOOLS40_HOME}\\usr\\bin;${PATH} "', con = "~/.Renvron")
```

之後最好先關閉RGui，再次重新啟動RGui，讓設定生效。



```
RGui (64-bit)
檔案 編輯 視 其他 程式套件 視窗 輔助
[Icons]
R Console
R version 4.0.0 (2020-04-24) -- "Arbor Day"
Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R 是免費軟體，不提供任何擔保。
在某些條件下您可以將其自由散布。
用 'license()' 或 'licence()' 來獲得散布的詳細條件。

R 是個合作計劃，有許多人為之做出了貢獻。
用 'contributors()' 來看詳細的情況並且
用 'citation()' 會告訴您如何在出版品中正確地參照 R 或 R 套件。

用 'demo()' 來看一些示範程式，用 'help()' 來檢視線上輔助檔案，或
用 'help.start()' 透過 HTML 瀏覽器來看輔助檔案。
用 'q()' 離開 R。

> writeLines('PATH="${RTOOLS40_HOME}\\usr\\bin;${PATH} "', con = "~/.Renvron")
> |
```

SECTION III

# RSTUDIO



# RStudio

- 一種 R 的 IDE (integrated development environment) (整合開發環境)
- R 的前端使用者介面
- 儀表板(dashboard)樣態，集各種功能於一身
- 具備很多功能，協助提升撰寫程式的效率
- 與 R 密切結合，啟動 RStudio 即同時啟動 R (Opening RStudio opens an R session.)

<https://www.rstudio.com/products/rstudio/download/>

=> download RStudio-X.X.XXXX.exe (2021年4月初的版本為1.4.1106)

=> install (by accepting defaults)



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### RStudio Desktop 1.2.1335 — [Release Notes](#)

RStudio requires R 3.0.1+. If you don't already have R, [download it here](#).

Linux users may need to import RStudio's [public code-signing key](#) prior to installation, depending on the operating system's security policy.

RStudio 1.2 requires a 64-bit operating system, and works exclusively with the 64 bit version of R. If you are on a 32 bit system or need the 32 bit version of R, you can use an [older version of RStudio](#).

### Installers for Supported Platforms

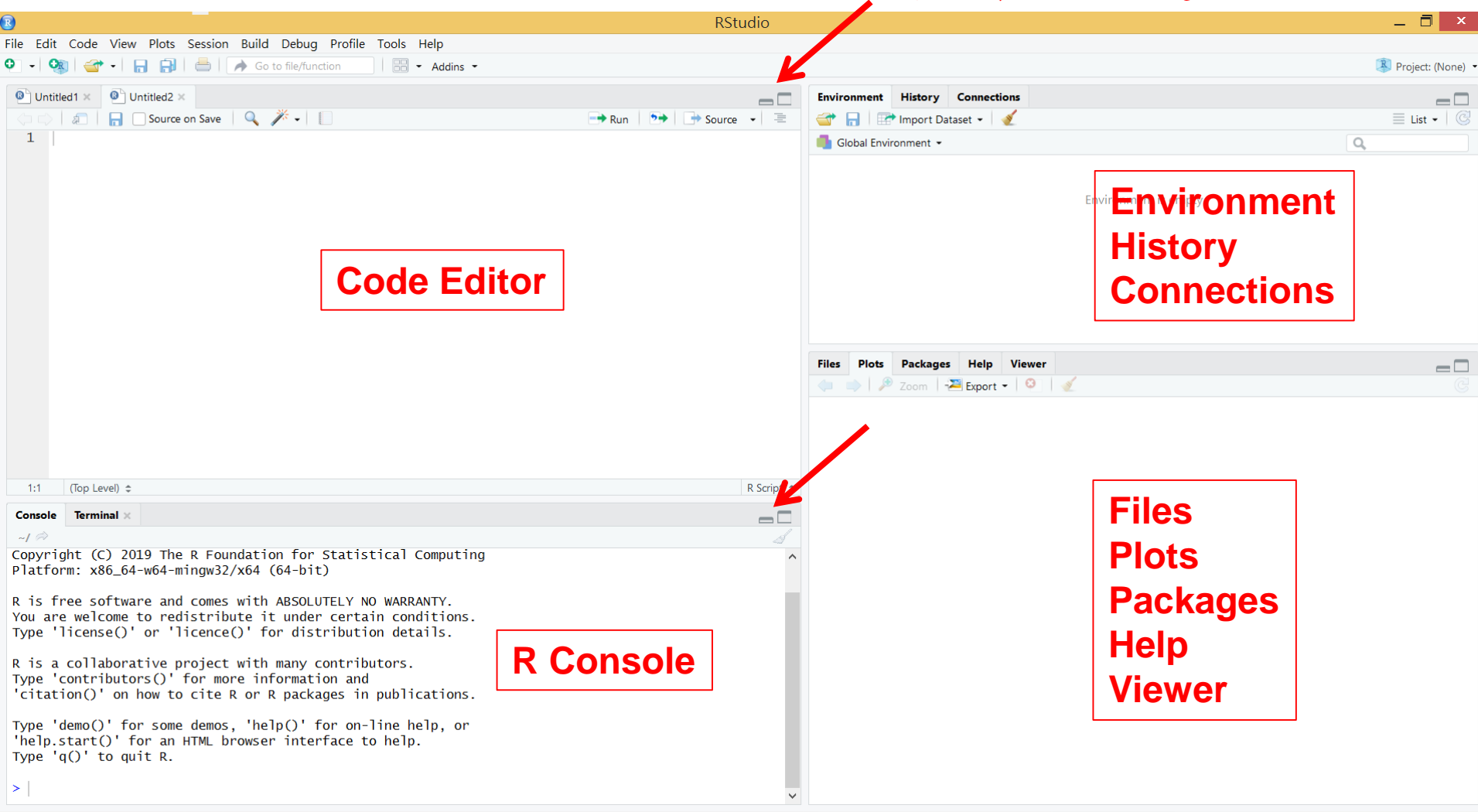


Installers	Size	Date	MD5
<a href="#">RStudio 1.2.1335 - Windows 7+ (64-bit)</a>	126.9 MB	2019-04-08	d0e2470f1f8ef4cd35a669aa323a2136
<a href="#">RStudio 1.2.1335 - Mac OS X 10.12+ (64-bit)</a>	121.1 MB	2019-04-08	6c570b0e2144583f7c48c284ce299eef
<a href="#">RStudio 1.2.1335 - Ubuntu 14/Debian 8 (64-bit)</a>	92.2 MB	2019-04-08	c1b07d0511469abfe582919b183eee83
<a href="#">RStudio 1.2.1335 - Ubuntu 16 (64-bit)</a>	99.3 MB	2019-04-08	c142d69c210257fb10d18c045fff13c7
<a href="#">RStudio 1.2.1335 - Ubuntu 18/Debian 10 (64-bit)</a>	100.4 MB	2019-04-08	71a8d1990c0d97939804b46cfb0aea75
<a href="#">RStudio 1.2.1335 - Fedora 19/RedHat 7 (64-bit)</a>	114.1 MB	2019-04-08	296b6ef88969a91297fab6545f256a7a
<a href="#">RStudio 1.2.1335 - Debian 9 (64-bit)</a>	100.6 MB	2019-04-08	1e32d4d6f6e216f086a81ca82ef65a91
<a href="#">RStudio 1.2.1335 - OpenSUSE 15 (64-bit)</a>	101.6 MB	2019-04-08	2795a63c7efd8e2aa2dae86ba09a81e5
<a href="#">RStudio 1.2.1335 - SLES/OpenSUSE 12 (64-bit)</a>	94.4 MB	2019-04-08	c65424b06ef6737279d982db9eefcae1

安裝完成的模樣

# 內容項目與排列組合可在 Tools / Global Options... / [Options] Pane Layout 處設定

上下視窗顯示由此處調整



# 變更字體大小

Tools / Global Options... / [Options] Appearance / Editor font size

The screenshot shows the RStudio interface with the 'Tools' menu open and the 'Global Options...' dialog box. The 'Appearance' tab is selected, and the 'Editor font size' is set to 14. A red arrow points to the 'Global Options...' menu item, and another red arrow points to the 'Editor font size' dropdown menu. The background shows a code editor with R code.

**Tools** Help

- Install Packages...
- Check for Package Updates...
- Version Control ▶
- Shell...
- Terminal ▶
- Addins ▶
- Keyboard Shortcuts Help Alt+Shift+K
- Modify Keyboard Shortcuts...
- Project Options...
- Global Options...**

**Options**

- General
- Code
- Appearance**
- Pane Layout
- Packages
- R Markdown
- Sweave
- Spelling
- Git/SVN
- Publishing
- Terminal

RStudio theme: Modern

Zoom: 100%

Editor font: Lucida Console

Editor font size: 14

Editor theme:

- Ambiance
- Chaos
- Chrome
- Clouds
- Clouds Midnight
- Cobalt
- Crimson Editor
- Dawn
- Dracula
- Dreamweaver
- Eclipse
- Idle Fingers
- Katzenmilch
- Kr Theme
- Material

Add... Remove

```
# plotting of R objects
plot <- function (x, y,
{
  if (is.function(x) &&
      is.null(attr(x, "
{
  if (missing(y))
    y <- NULL

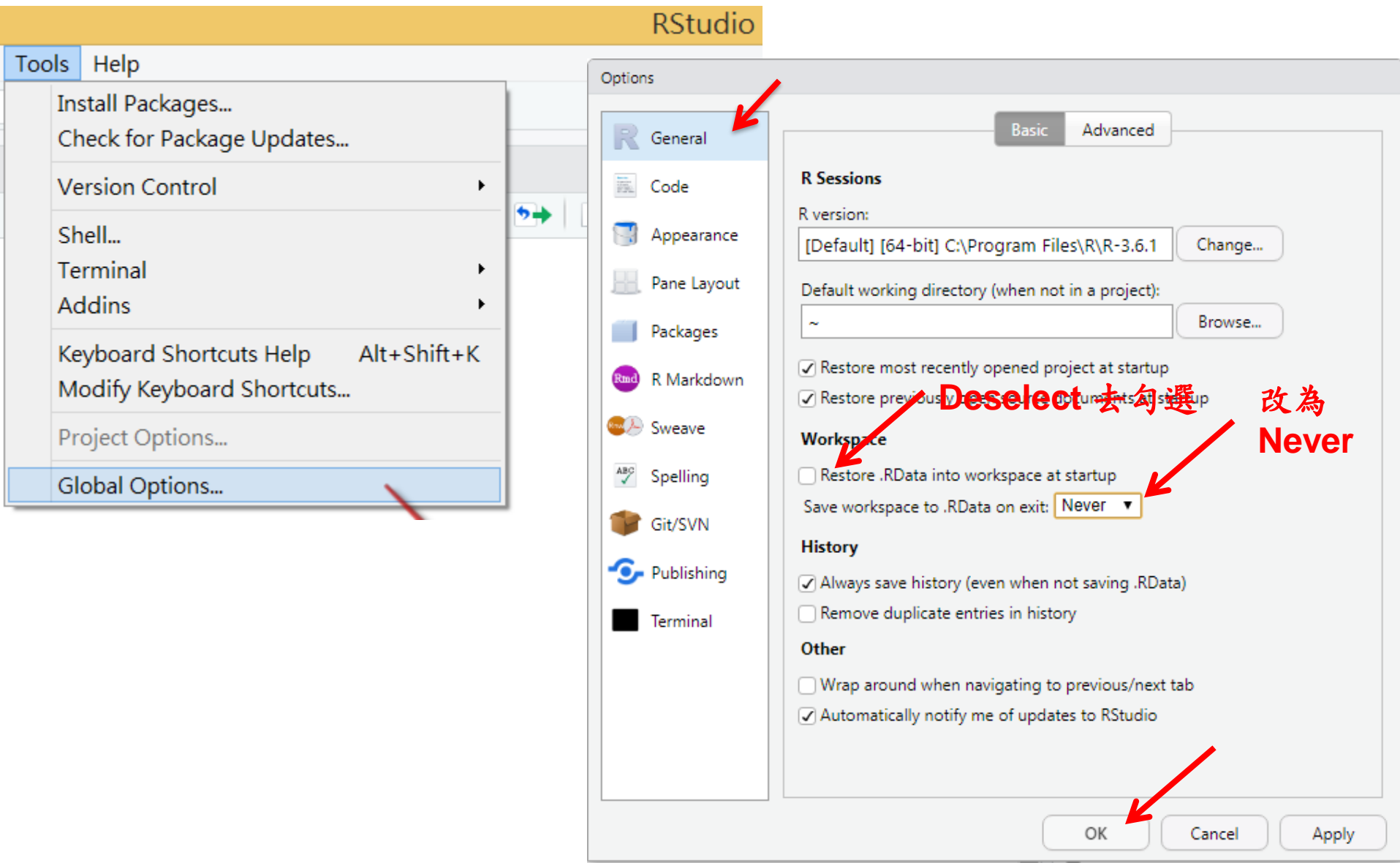
# check for ylab ar
hasylab <- function
!all(is.na(
  pmatch(names(li
            "ylab"))))

if (hasylab(...))
  plot.function(x,

else
  plot.function(
    x, y,
```

OK Cancel Apply

更改設定：不要保留工作空間(workspace) => 養成自己儲存程式碼的習慣  
Tools / Global Options... / [Options] General



更改 CRAN mirror site 為 國立台灣大學  
(預設係由RStudio網站下載套件 [可能速度會較慢])  
Tools / Global Options... / [Options] Packages

The image shows the RStudio interface with the 'Tools' menu open. The 'Global Options...' option is selected. The 'Options' dialog box is open, and the 'Packages' tab is active. In the 'Package management' section, the 'CRAN mirror' is set to 'Global (CDN) - RStudio'. A red arrow points to the 'Change...' button. A second dialog box, 'Choose Primary Repository', is open, showing a list of CRAN mirrors. The 'Taiwan (Taipei) [https] - National Taiwan University, Taipei' option is highlighted with a blue selection bar. A red arrow points to this option. The 'OK' and 'Cancel' buttons are visible at the bottom of the dialog boxes.

RStudio

Tools Help

Install Packages...  
Check for Package Updates...

Version Control

Shell...  
Terminal  
Addins

Keyboard Shortcuts Help  
Modify Keyboard Shortcuts...  
Alt+Shift

Project Options...

Global Options...

Options

General  
Code  
Appearance  
Pane Layout  
Packages  
R Markdown  
Sweave  
Spelling  
Git/SVN  
Publishing  
Terminal

Package management

CRAN mirror:  
Global (CDN) - RStudio Change...

Enable packages pane  
Use secure download method for HTTP  
Use Internet Explorer library/proxy

Package development

Use devtools package functions if e  
Save all files prior to building packa  
Automatically navigate editor to bu  
Hide object files in package src dire  
Cleanup output after successful R C  
View Rcheck directory after failed R  
Use Rcpp template when creating c  
Always use LF line-endings in Unix

Developing Packages with RStudio

Choose Primary Repository

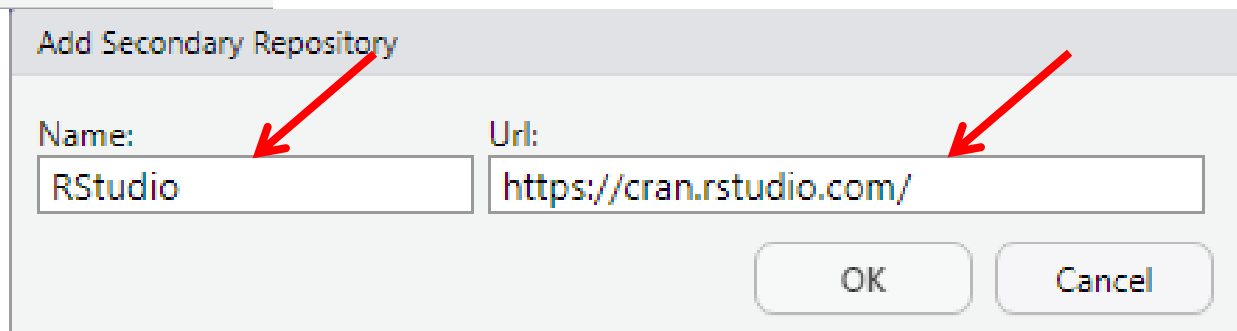
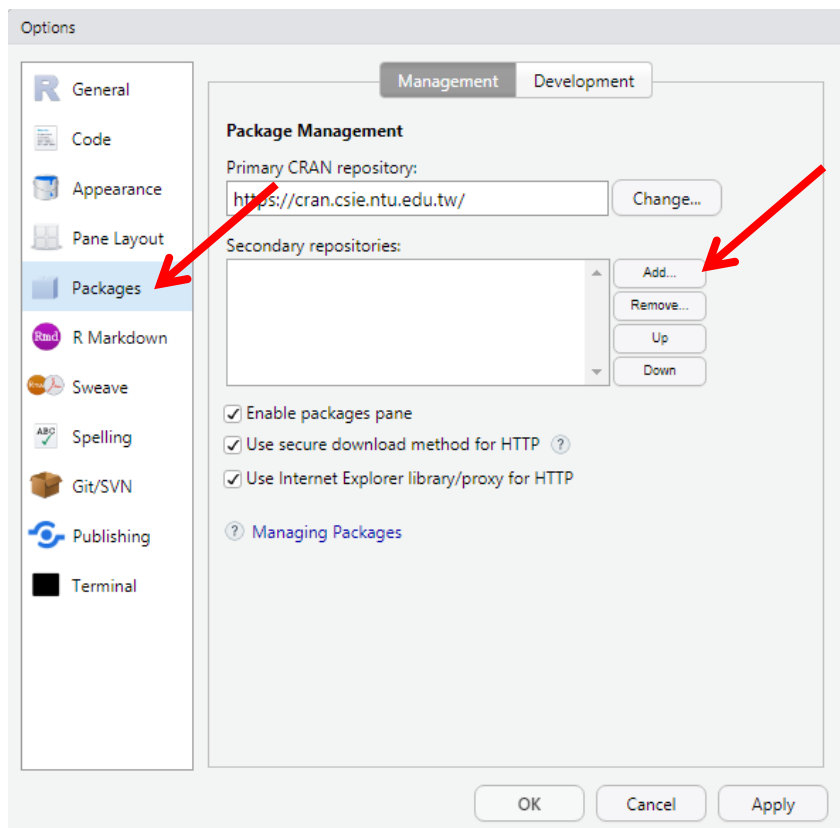
Custom:

CRAN Mirrors:

- Spain (Madrid) [https] - Spanish National Research Network, Madrid
- Sweden [https] - Academic Computer Club, Umeå University
- Switzerland [https] - ETH Zürich
- Taiwan (Chungli) [https] - Department of Computer Science and Engineerin
- Taiwan (Taipei) [https] - National Taiwan University, Taipei**
- Turkey (Denizli) [https] - Pamukkale University, Denizli
- Turkey (Mersin) [https] - Middle East Technical University Northern Cyprus
- UK (Bristol) [https] - University of Bristol
- UK (London 1) [https] - Imperial College London
- USA (IA) [https] - Iowa State University, Ames, IA
- USA (KS) [https] - University of Kansas, Lawrence, KS
- USA (MI 1) [https] - Michigan Technological University, Houghton, MI
- USA (MI 2) [https] - MBNI, University of Michigan, Ann Arbor, MI
- USA (OH) [https] - Case Western Reserve University, Cleveland, OH
- USA (OR) [https] - Oregon State University
- USA (TN) [https] - National Institute for Computational Sciences, Oak Ridge
- USA (TX 1) [https] - Revolution Analytics, Dallas, TX
- Uruguay [https] - Facultad de Derecho, Universidad de la República

OK Cancel

若擔心台灣大學mirror site未必有所有的套件  
可再指定第二(或更多) mirror site(s) : RStudio <https://cran.rstudio.com/>



SECTION IV

# TIDYVERSE



# Packages 套件

## 比擬



下載與安裝 App  
必要時更新 App



Google Play

使用前開啟 App

下載與安裝 package  
`install.packages(" ")`  
必要時更新 package  
`update.packages(" ")`

使用前開啟(載入) package  
`library( )`  
或  
`require( )`



# 7 Base Packages Attached on Start

```
> sessionInfo()
R version 3.6.1 (2019-07-05)
Platform: x86_64-w64-mingw32/x64 (64-bit)
Running under: Windows 10 x64 (build 18362)

Matrix products: default

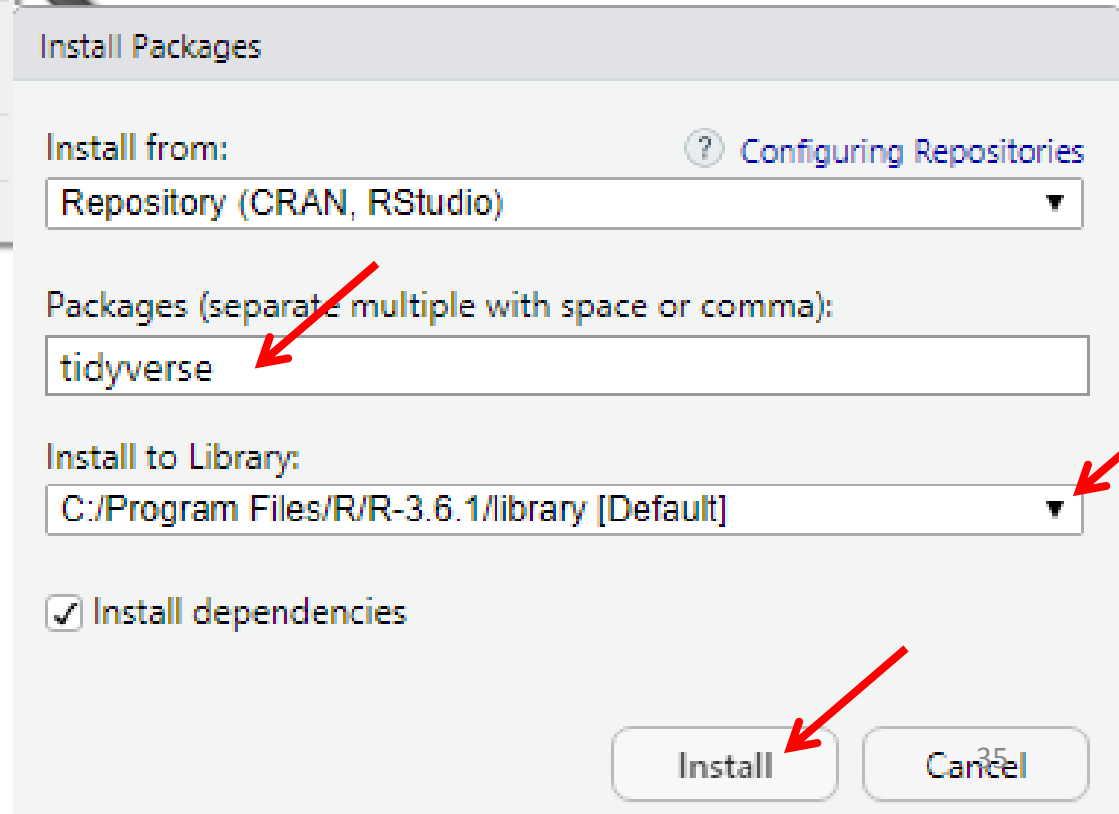
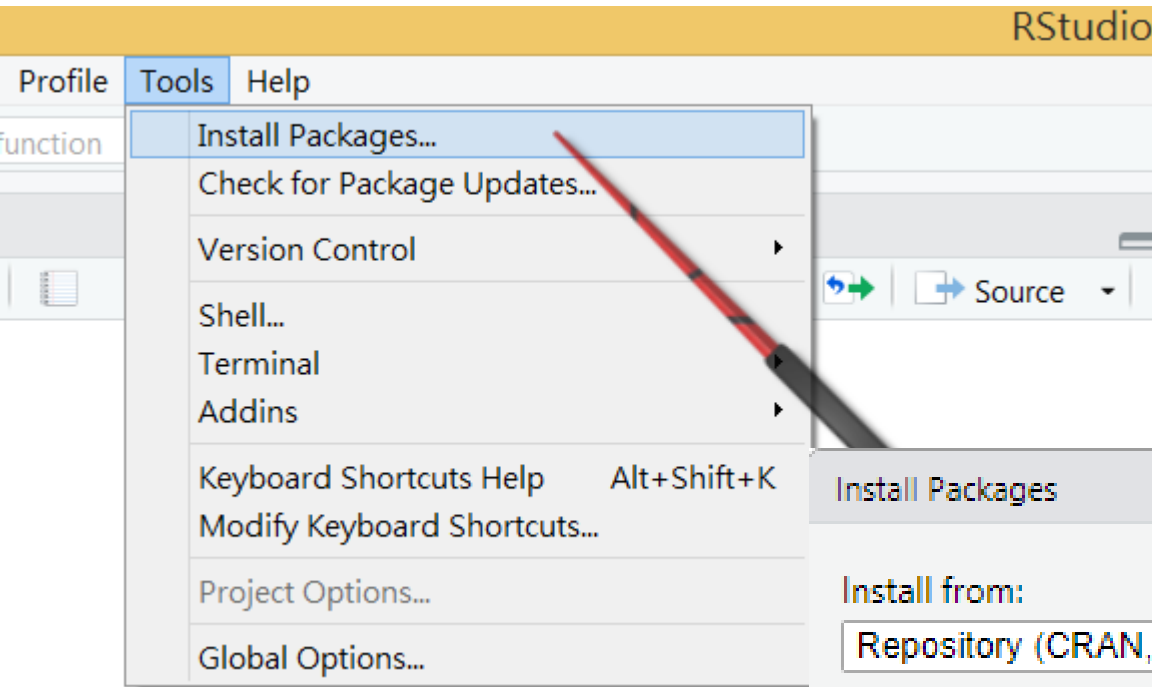
locale:
 [1] LC_COLLATE=Chinese (Traditional)_Taiwan.950
 [2] LC_CTYPE=Chinese (Traditional)_Taiwan.950
 [3] LC_MONETARY=Chinese (Traditional)_Taiwan.950
 [4] LC_NUMERIC=C
 [5] LC_TIME=Chinese (Traditional)_Taiwan.950

attached base packages:
 [1] stats      graphics  grDevices utils      datasets  methods   base

loaded via a namespace (and not attached):
 [1] compiler_3.6.1 tools_3.6.1
```

# [第一種方法] Install Packages “tidyverse” Tools / Install Packages... / Packages

RStudio



[第二種方法] 也可從 Files/Plots/Packages/Help/Viewer Pane 來 Install Packages

The image shows the RStudio interface with the Packages pane open. The 'Install' button is highlighted with a red arrow. A dialog box titled 'Install Packages' is open, showing the 'tidyverse' package being installed from the 'Repository (CRAN, RStudio)' to the default library path. The 'Install' button in the dialog is also highlighted with a red arrow.

**RStudio**

Name	Description
<input type="checkbox"/> abind	Combine Multidimensional
<input type="checkbox"/> acepack	ACE and AVAS for Selecting
<input type="checkbox"/> askpass	Safe Password Entry for R
<input type="checkbox"/> assertthat	Easy
<input type="checkbox"/> backports	Re
<input checked="" type="checkbox"/> base	Th

Install Packages

Install from: [Configuring Repositories](#)

Repository (CRAN, RStudio)

Packages (separate multiple with space or comma):

tidyverse

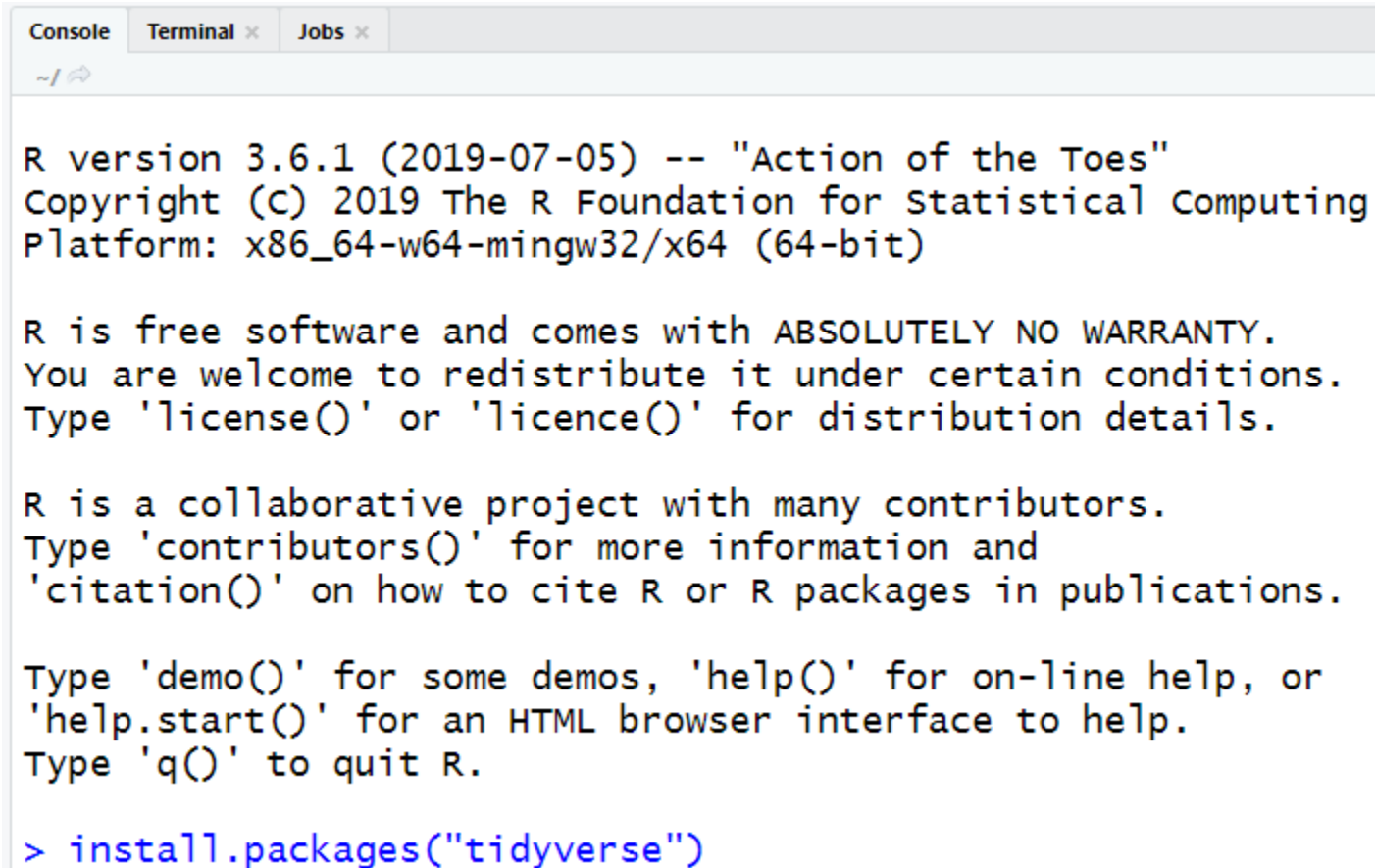
Install to Library:

C:/Program Files/R/R-3.6.1/library [Default]

Install dependencies

Install Cancel

[第三種方法] 也可從 Console Pane 來 Install Packages  
`install.packages("tidyverse")`



```
Console Terminal x Jobs x
~/ ↗

R version 3.6.1 (2019-07-05) -- "Action of the Toes"
Copyright (C) 2019 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

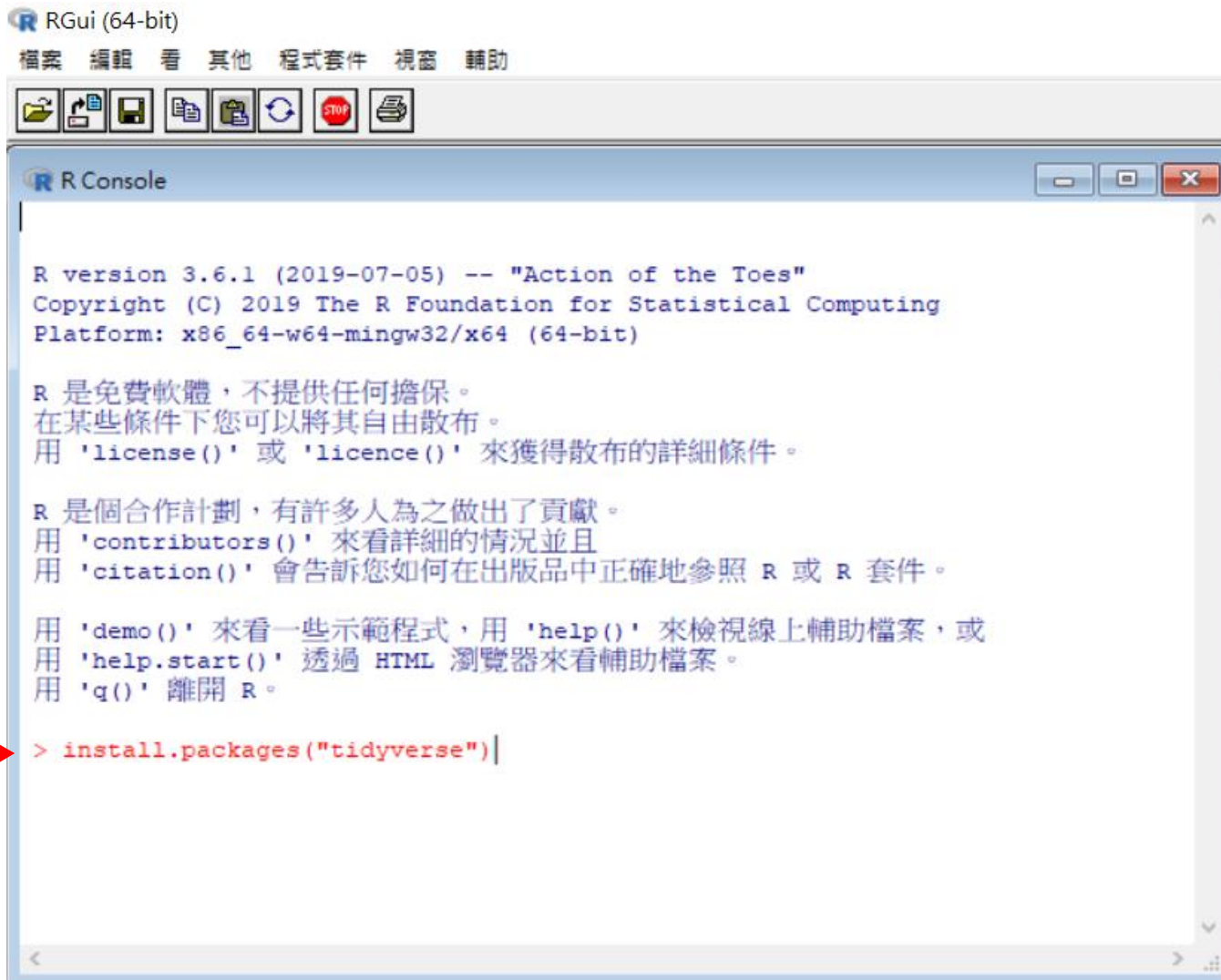
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> install.packages("tidyverse")
```

RStudio

# [第一種方法] Install Packages “tidyverse”

## `install.packages("tidyverse")`



```
RGui (64-bit)
檔案 編輯 看 其他 程式套件 視窗 輔助

R Console

R version 3.6.1 (2019-07-05) -- "Action of the Toes"
Copyright (C) 2019 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R 是免費軟體，不提供任何擔保。
在某些條件下您可以將其自由散布。
用 'license()' 或 'licence()' 來獲得散布的詳細條件。

R 是個合作計劃，有許多人為之做出了貢獻。
用 'contributors()' 來看詳細的情況並且
用 'citation()' 會告訴您如何在出版品中正確地參照 R 或 R 套件。

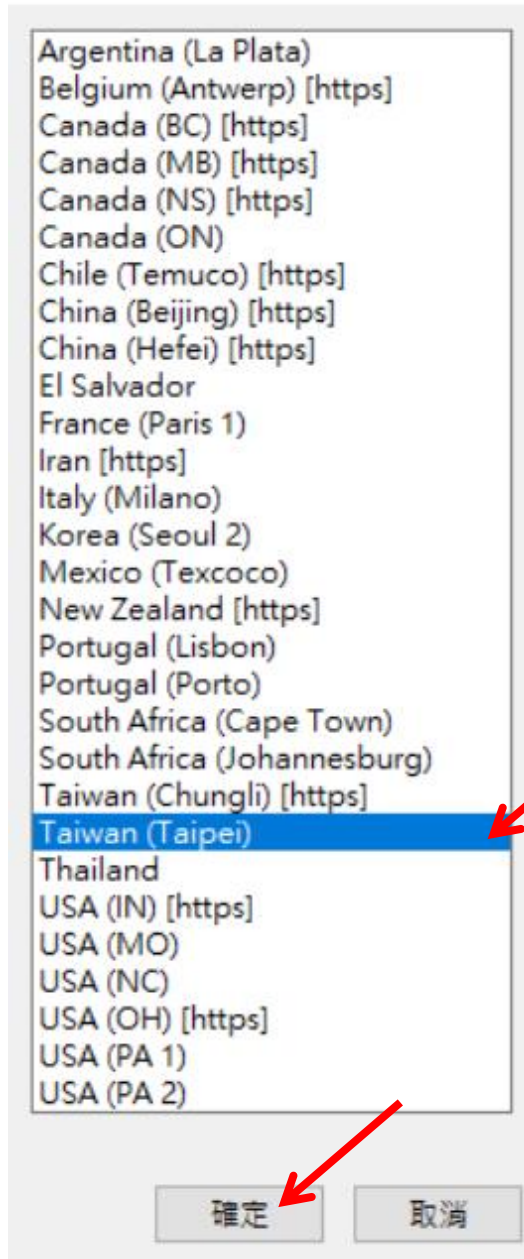
用 'demo()' 來看一些示範程式，用 'help()' 來檢視線上輔助檔案，或
用 'help.start()' 透過 HTML 瀏覽器來看輔助檔案。
用 'q()' 離開 R。

> install.packages("tidyverse")|
```

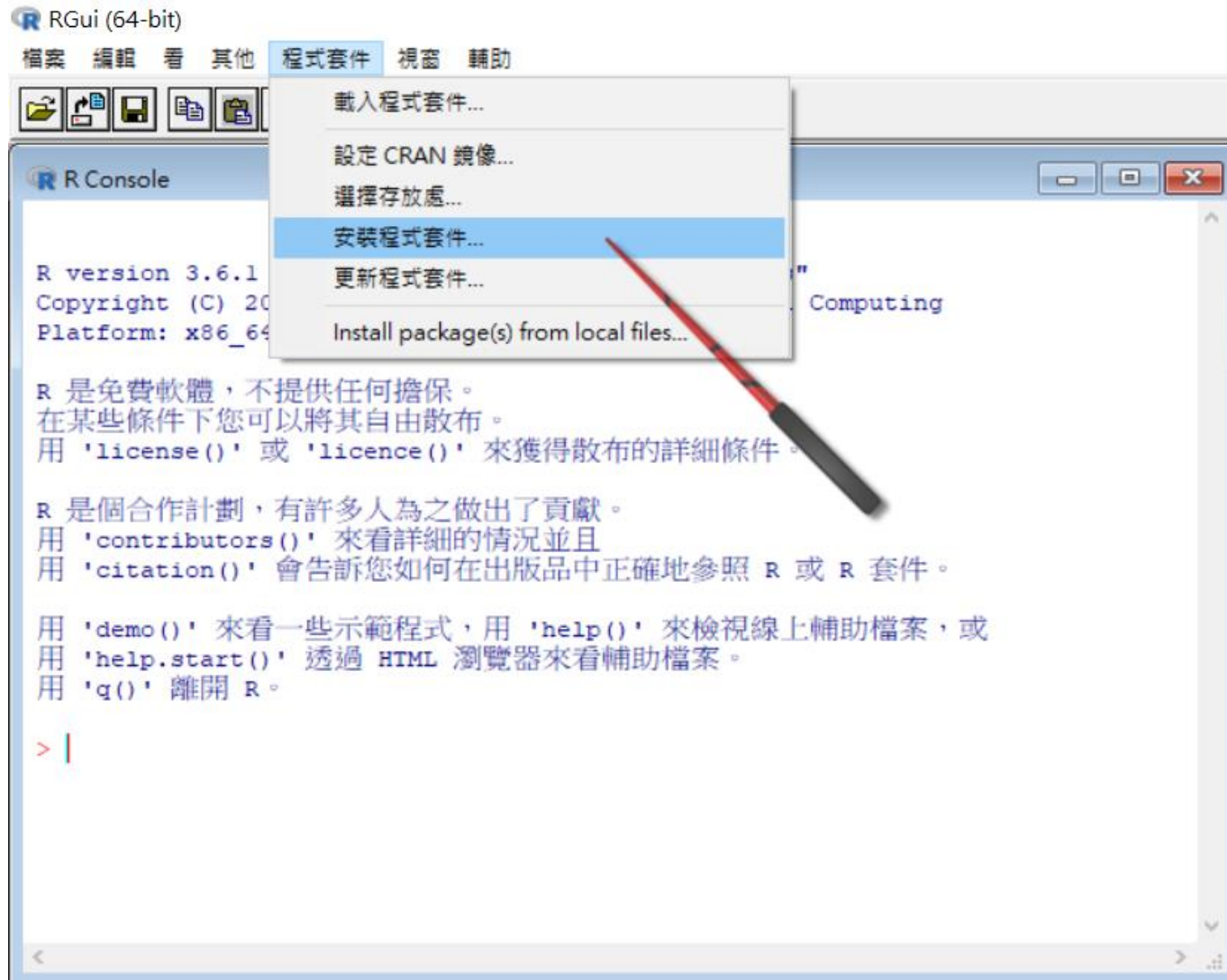
[第一種方法] --- Please select a CRAN mirror for use in this session ---



Other CRAN mirrors



## [第二種方法] 從 程式套件 / 安裝程式套件...





[第二種方法] 會要求設定mirror site

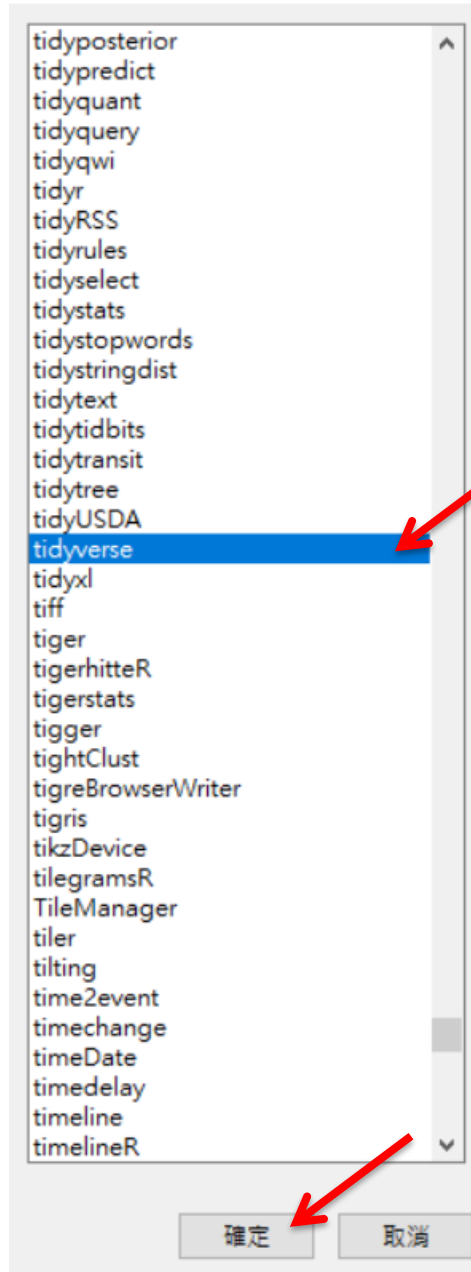
\* 一開始設定mirror site後，稍後不需重複設定

Other CRAN mirrors



## [第二種方法] 尋找套件 (稍費眼力)

Packages



SECTION V

# **UPDATE PACKAGES**

# [第一種方法] Tools / Check for Package Updates...

RStudio

The image shows the RStudio interface with the 'Tools' menu open. The 'Check for Package Updates...' option is highlighted. A red arrow points from this menu item to the 'Update Packages' dialog box. This dialog box contains a table of packages with columns for Package, Installed, Available, and NEWS. The 'Select All' button at the bottom is highlighted with a red arrow. A second 'Update Packages' dialog box is shown below, where all packages are selected (checkboxes are checked), and the 'Install Updates' button at the bottom is highlighted with a red arrow.

Tools Help

- Install Packages...
- Check for Package Updates...
- Version Control
- Shell...
- Terminal
- Jobs
- Addins
- Keyboard Shortcuts Help
- Modify Keyboard Shortcuts...
- Project Options...
- Global Options...

Package	Installed	Available	NEWS
<input type="checkbox"/> htmlwidgets	1.5	1.5.1	
<input type="checkbox"/> pkgbuild	1.0.5	1.0.6	
<input type="checkbox"/> RcppArmadillo	0.9.700.2.0	0.9.800.1.0	
<input type="checkbox"/> shiny	1.3.2	1.4.0	
<input type="checkbox"/> stringdist	0.9.5.2	0.9.5.3	

Select All Select None Install Updates

Package	Installed	Available	NEWS
<input checked="" type="checkbox"/> htmlwidgets	1.5	1.5.1	
<input checked="" type="checkbox"/> pkgbuild	1.0.5	1.0.6	
<input checked="" type="checkbox"/> RcppArmadillo	0.9.700.2.0	0.9.800.1.0	
<input checked="" type="checkbox"/> shiny	1.3.2	1.4.0	
<input checked="" type="checkbox"/> stringdist	0.9.5.2	0.9.5.3	

Select All Select None Install Updates Cancel

[第二種方法] 也可從 Files/Plots/Packages/Help/Viewer Pane 來 Install Packages

The screenshot shows the RStudio interface with the 'Update Packages' dialog box open. The dialog box contains a table of packages with columns for Package, Installed, Available, and NEWS. The 'Install Updates' button is highlighted with a red arrow.

Package	Installed	Available	NEWS
<input type="checkbox"/> htmlwidgets	1.5	1.5.1	
<input type="checkbox"/> pkgbuild	1.0.5	1.0.6	
<input type="checkbox"/> RcppArmadillo	0.9.700.2.0	0.9.800.1.0	
<input type="checkbox"/> shiny	1.3.2	1.4.0	
<input type="checkbox"/> stringdist	0.9.5.2	0.9.5.3	

Update Packages

Select All Select None Install Updates

Select All Select None Install Updates Cancel

RStudio

[第三種方法] 也可從 Console Pane 來更新已安裝的套件  
`update.packages(checkBuilt=TRUE, ask=FALSE)`

RStudio

```
Source
Console Terminal x Jobs x
~/
R version 3.6.1 (2019-07-05) -- "Action of the Toes"
Copyright (C) 2019 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> update.packages(checkBuilt=TRUE, ask=FALSE)|
```

# [第一種方法] update.packages(checkBuilt=TRUE, ask=FALSE)



```
RGui (64-bit)
檔案 編輯 看 其他 程式套件 視窗 輔助

R Console

R version 3.6.1 (2019-07-05) -- "Action of the Toes"
Copyright (C) 2019 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R 是免費軟體，不提供任何擔保。
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R 是個合作計劃，有許多人為之做出了貢獻。
用 'contributors()' 來看詳細的情況並且
用 'citation()' 會告訴您如何在出版品中正確地參照 R 或 R 套件。

用 'demo()' 來看一些示範程式，用 'help()' 來檢視線上輔助檔案，或
用 'help.start()' 透過 HTML 瀏覽器來看輔助檔案。
用 'q()' 離開 R。

> update.packages(checkBuilt=TRUE, ask=FALSE)
--- Please select a CRAN mirror for use in this session ---
```

[第一種方法] --- Please select a CRAN mirror for use in this session ---

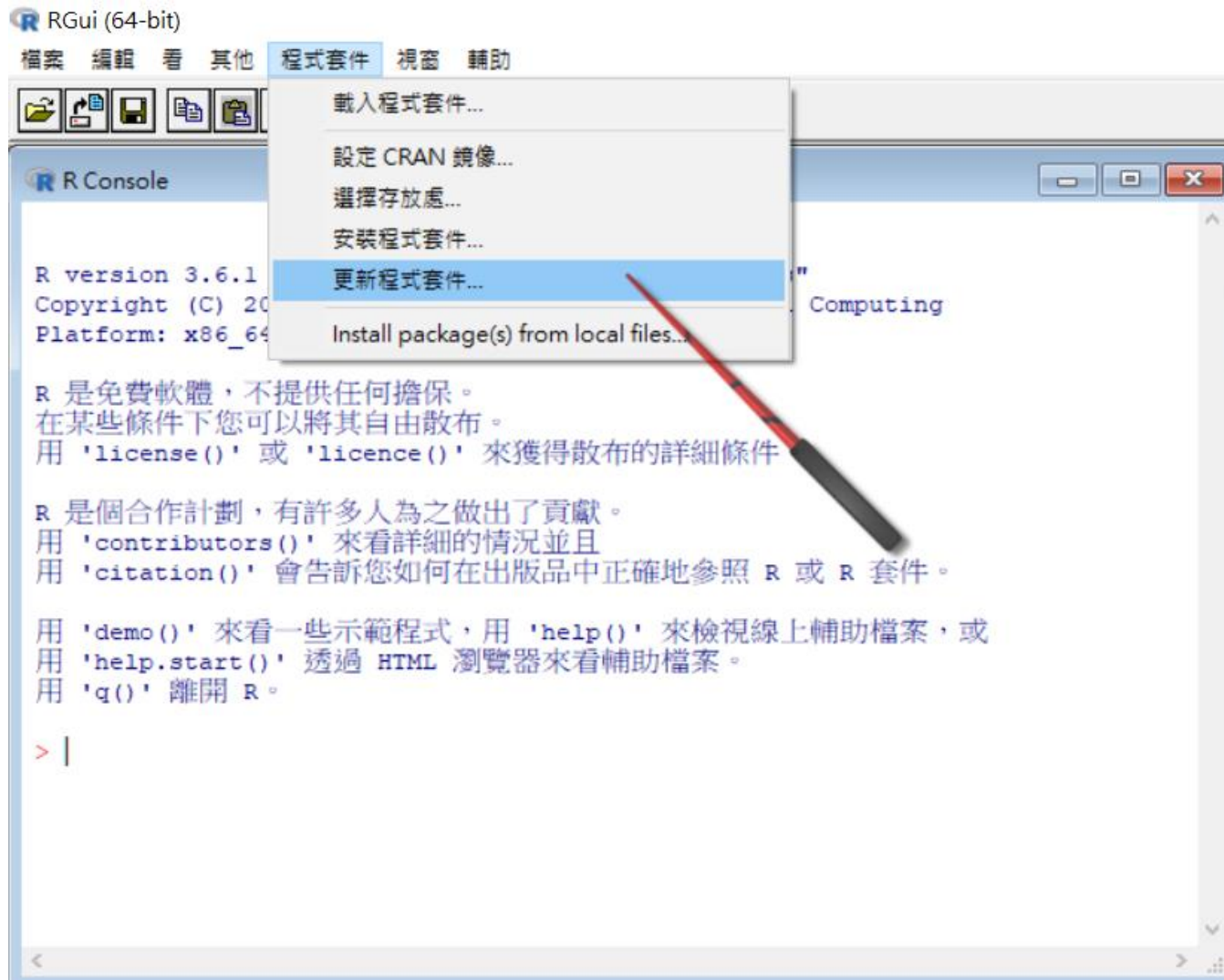


Other CRAN mirrors





## [第二種方法] 從 程式套件 / 更新程式套件



[第二種方法] 會要求設定mirror site

\* 一開始設定mirror site後，稍後不需重複設定

Other CRAN mirrors



SECTION VI

**NOTEPAD++**

**(OPTIONAL) (建議安裝)**

# Notepad++

- 純文字編輯器，自由軟體
- 開發者：侯今吾，台灣人
- 有多種外掛模組(plugins)
- 可依定義格式檔讀取各種程式語言，用**色彩顯示關鍵字或保留字**



Current Version 7.8.1

- 🏠 Home
- 📄 Download
- 📰 News
- 📖 Online Help
- 📁 Resources
- 📡 RSS

## What is Notepad++

### News about Notepad++ new website

Notepad++ is a free (as in “free speech” and also as in “free beer”) source code editor and Notepad replacement that supports several languages. Running in the MS Windows environment, its use is governed by GPL License.

Based on the powerful editing component Scintilla, Notepad++ is written in C++ and uses pure Win32 API and STL which ensures a higher execution speed and smaller program size. By optimizing as many routines as possible without losing user friendliness, Notepad++ is trying to reduce the world carbon dioxide emissions. When using less CPU power, the PC can throttle down and reduce power consumption, resulting in a greener environment.

<https://notepad-plus-plus.org/downloads/>

=> download npp.X.X.X.Installer.exe (2021年4月初的版本為7.9.5)

=> 最好安裝32位元版 (支援的套件較多)

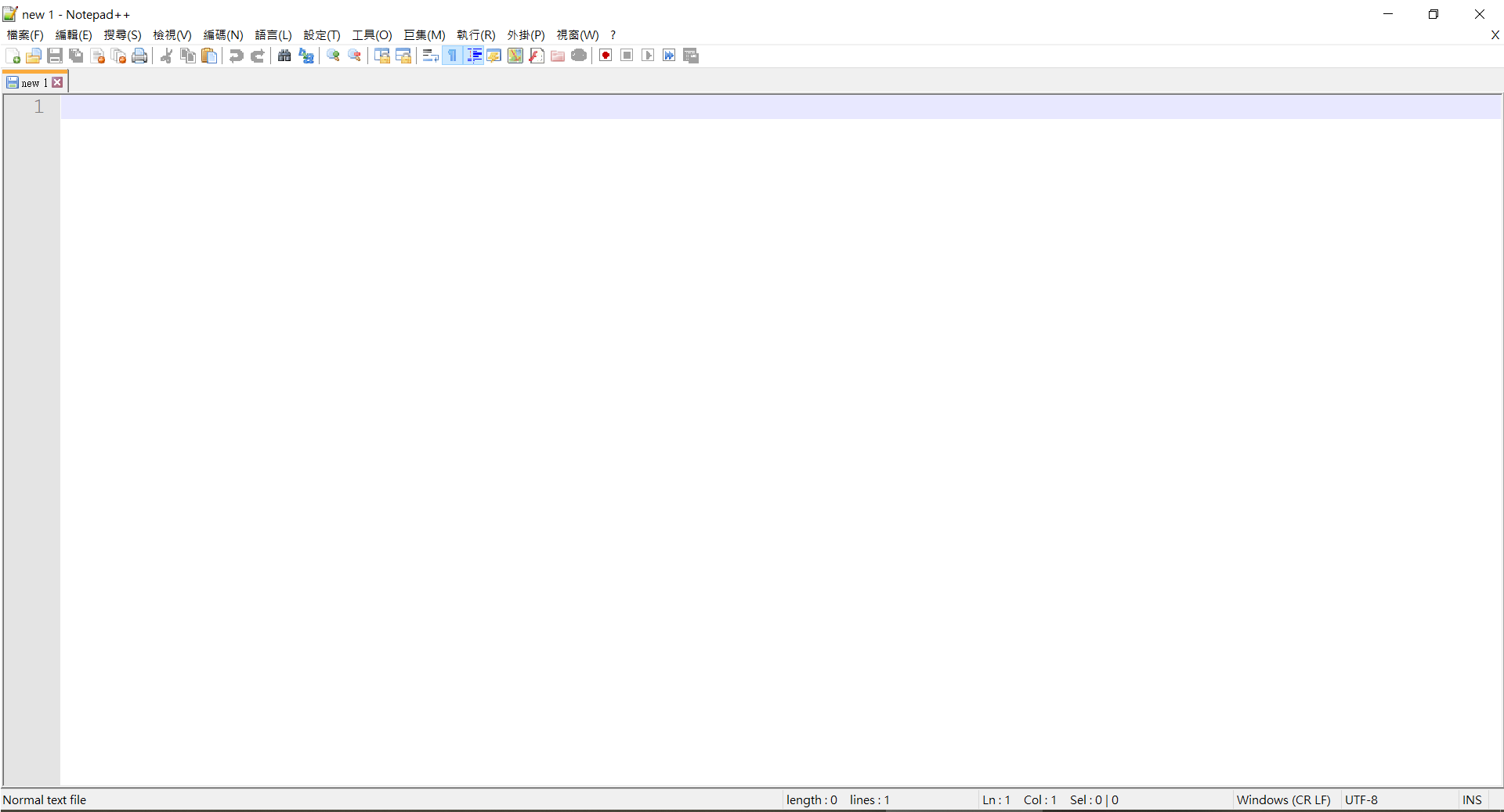
## Notepad++ 7.8.1 release

Release Date: 2019-10-29

Download 32-bit x86



# 請自行摸索



<https://npp-user-manual.org/>

## Notepad++ User Manual

Search

Getting started

Programming Languages

User Defined Languages

Editing

Searching

Sessions, Workspaces, and  
Projects

Task automation with macros

Auto-completion

Function List

Extend functionality with plugins

Plugin Communication

Preferences

# Notepad++ User Manual

*Documentation is like sex, when it's good, it's very, very good; when it's bad, it's better than nothing.*

Of course, it's not our goal to create bad documentation, but you get what we mean.

**Notepad++ User Manual** is built collaboratively, and [your contribution is very welcome](#).



SECTION VII

**MICROSOFT R OPEN**  
**(OPTIONAL) (僅供參考 不用安裝)**

# Another Version of R from Microsoft

## *Microsoft R Open*

Microsoft R Open is the enhanced distribution of R from Microsoft Corporation.

Microsoft R Open includes multi-threaded math libraries to improve the performance of R.

# Microsoft R Open ( <https://mran.microsoft.com/> ) ( <https://mran.microsoft.com/open> )

## Microsoft R Application Network

[Home](#)   [About R](#)   [Microsoft R Open](#)   [R Packages](#)   [R Community](#)   [R Tools](#)

### Microsoft R Open: The Enhanced R Distribution



Microsoft R Open is **the enhanced distribution of R** from Microsoft Corporation. It is a complete open source platform for statistical analysis and data science.

The current version, Microsoft R Open 3.5.1, is based on (and 100% compatible with) R-3.5.1, the most widely used statistics software in the world, and is therefore fully compatibility with all packages, scripts and applications that work with that version of R. It includes additional capabilities for **improved performance**, **reproducibility**, as well as support for **Windows and Linux-based platforms**.

Like R, Microsoft R Open is open source.

[Learn more...](#)



Learn More

[About Microsoft R Open](#)

[Reproducibility](#)

[Multithreaded Performance](#)

```
RGui - Microsoft R Open version 3.4 (64-bit)
檔案 編輯 視 其他 程式套件 視窗 輔助
R Console
在這些條件下您可以將其自由散布。
用 'license()' 或 'licence()' 來獲得散布的詳細條件。
R 是個合作計劃，有許多人為之做出了貢獻。
用 'contributors()' 來看詳細的情況並且
用 'citation()' 會告訴您如何在出版品中正確地參照 R 或 R 套件。
用 'demo()' 來看一些示範程式。用 'help()' 來檢視線上輔助檔案，或
用 'help.start()' 透過 HTML 瀏覽器來看輔助檔案。
用 'q()' 離開 R。
Microsoft R Open 3.4.3
The enhanced R distribution from Microsoft
Microsoft packages Copyright (C) 2017 Microsoft Corporation
No performance acceleration libraries were detected. To take advantage of
the available processing power, also install MKL for R Open.
Visit http://go.microsoft.com/fwlink/?LinkID=698301 for more details.
Default CRAN mirror snapshot taken on 2018-01-01.
See: https://mran.microsoft.com/.
> |
```

# 注意 - 1

- 安裝 Microsoft R Open 後，最好使用其 RGui 版本，已預設從 <https://mran.microsoft.com/snapshot/> 來安裝與更新套件。如果執意在 RStudio 操作 Microsoft R Open，可能會在安裝與更新套件時產生錯誤。(因為 Microsoft R Open 的 R 版本落後於 R 官方版本 [Microsoft 稱最新未必最好]，而 RStudio 更新與更新套件的主要檔案庫 [Primary CRAN repository] 並不包括 Microsoft)

## 注意 - 2

- 安裝 Microsoft R Open 後，使用 RStudio 時，可能會問欲使用哪種版本的 R。如果不小心選取 Microsoft R Open 而之後欲改回官版的 R 時，需在 RStudio 更改設定：  
Tools / Global Options... / [Options] General / [Basic] [R Sessions] [R version:] Change... / [Choose R Installation] Choose a specific version of R:

The image shows the RStudio Options dialog box with the 'General' tab selected in the left sidebar. The 'Basic' tab is active in the 'R Sessions' section. The 'R version:' field displays '[64-bit] C:\Program Files\R\R-4.0.5'. A 'Change...' button is visible to the right of this field. A secondary dialog box titled 'Choose R Installation' is overlaid on top, prompting the user to select an R installation. It lists three options: 'Use your machine's default version of R64 (64-bit)', 'Use your machine's default version of R (32-bit)', and 'Choose a specific version of R:'. The third option is selected, and a list of specific R installations is shown below it, with '[64-bit] C:\Program Files\R\R-4.0.5' highlighted. The 'Rendering Engine' is set to 'Auto-detect (recommended)'. At the bottom of the main dialog, there are 'OK', 'Cancel', and 'Apply' buttons.

**General**

- Code
- Console
- Appearance
- Pane Layout
- Packages
- R Markdown
- Sweave
- Spelling
- Git/SVN
- Publishing
- Terminal
- Accessibility
- Python

**R Sessions**

R version: [64-bit] C:\Program Files\R\R-4.0.5 **Change...**

**Choose R Installation**

RStudio requires an existing installation of R in order to work. Please select the version of R to use.

- Use your machine's default version of R64 (64-bit)
- Use your machine's default version of R (32-bit)
- Choose a specific version of R:
  - [64-bit] C:\Program Files\R\R-4.0.5
  - [64-bit] C:\PROGRA~1\R\R-40~1.5
  - [64-bit] C:\Program Files\Microsoft\R Open\R-4.0

Rendering Engine: Auto-detect (recommended)

**OK** **Cancel** **Apply**

## 注意 - 3

- 安裝 Microsoft R Open 後，如果執意在 RStudio 操作 Microsoft R Open，需在 RStudio 更改檔案庫設定：Tools / Global Options... / [Options] Packages / [Management] [Package Management] [Primary CRAN repository] Change... / [Choose Primary Repository] [CRAN Mirrors:] USA (TX 1) [https] - Revolution Analytics, Dallas, TX (因為 Microsoft R Open 係微軟向 Revolution Analytics 公司併購)

Options dialog box showing the **Management** tab and the **Package Management** section.

The **Management** tab is selected, and the **Package Management** section is active. The primary CRAN repository is set to **USA (TX 1) [https] - Revolution Analytics, Dallas, TX**. A red arrow points to the **Change...** button next to the repository name.

The **Choose Primary Repository** dialog box is open, showing a list of CRAN Mirrors. The **USA (TX 1) [https] - Revolution Analytics, Dallas, TX** mirror is selected, indicated by a blue highlight and a red arrow.

The left sidebar shows the **Options** menu with the **Packages** option selected, indicated by a red arrow.

The **CRAN Mirrors** list includes:

- Spain (Madrid) [https] - Spanish National Research Network, Madrid
- Sweden (Borås) [https] - Infaia Networks
- Sweden (Umeå) [https] - Academic Computer Club, Umeå University
- Switzerland [https] - ETH Zürich
- Taiwan (Taipei) [https] - National Taiwan University, Taipei
- Turkey (Denizli) [https] - Pamukkale University, Denizli
- Turkey (Istanbul) [https] - Istanbul Gedik University
- Turkey (Mersin) [https] - Middle East Technical University Northern Cyprus C
- UK (Bristol) [https] - University of Bristol
- UK (London 1) [https] - Imperial College London
- USA (IA) [https] - Iowa State University, Ames, IA
- USA (KS) [https] - University of Kansas, Lawrence, KS
- USA (MI) [https] - MBNI, University of Michigan, Ann Arbor, MI
- USA (OH) [https] - Case Western Reserve University, Cleveland, OH
- USA (OR) [https] - Oregon State University
- USA (TN) [https] - National Institute for Computational Sciences, Oak Ridge
- USA (TX 1) [https] - Revolution Analytics, Dallas, TX**
- Uruguay [https] - Facultad de Derecho, Universidad de la República

Buttons: **OK**, **Cancel**, **Apply**



SECTION VIII

# **R COMMANDER**

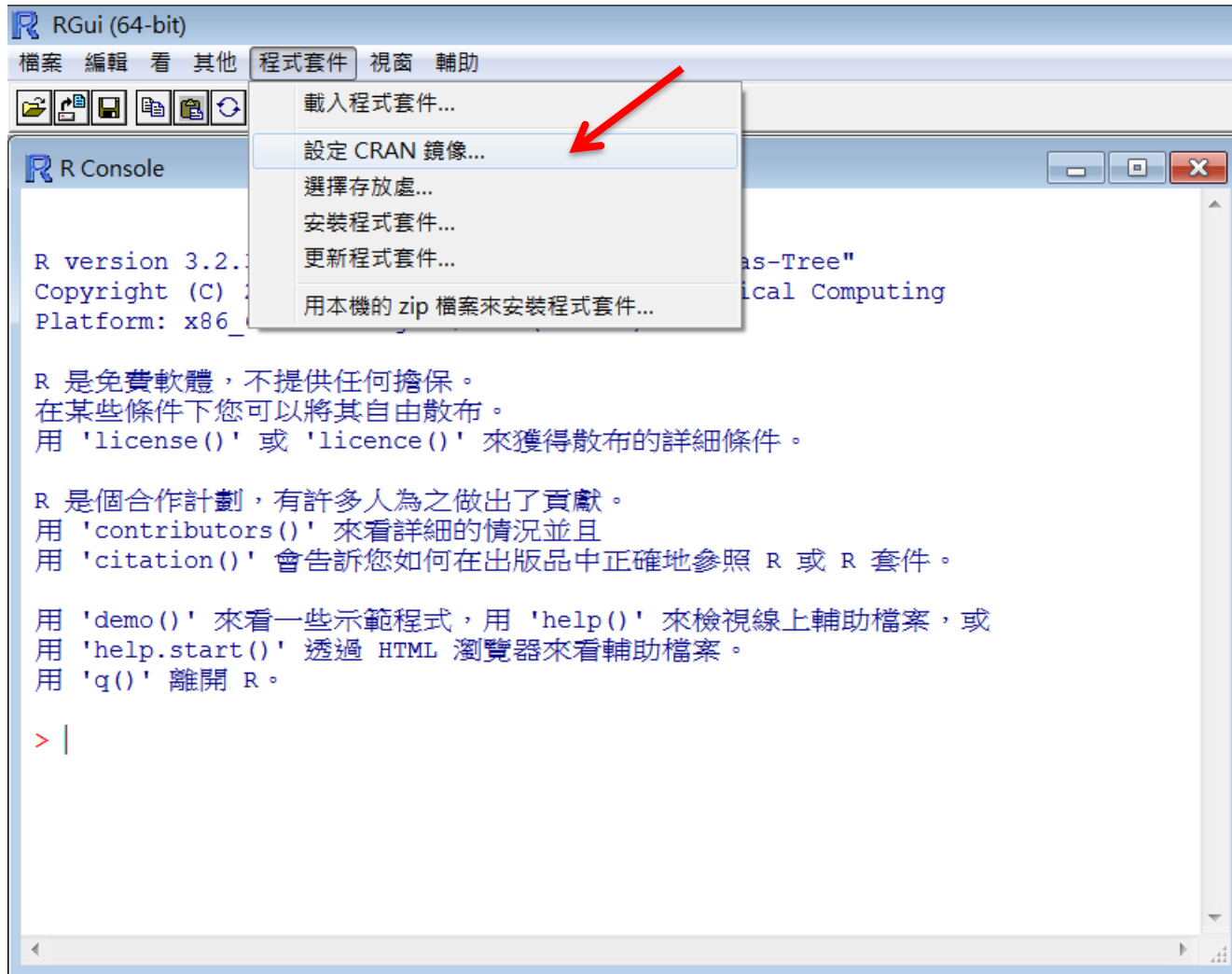
**(OPTIONAL) (僅供參考 不用安裝)**

If you prefer menu  
to scripting

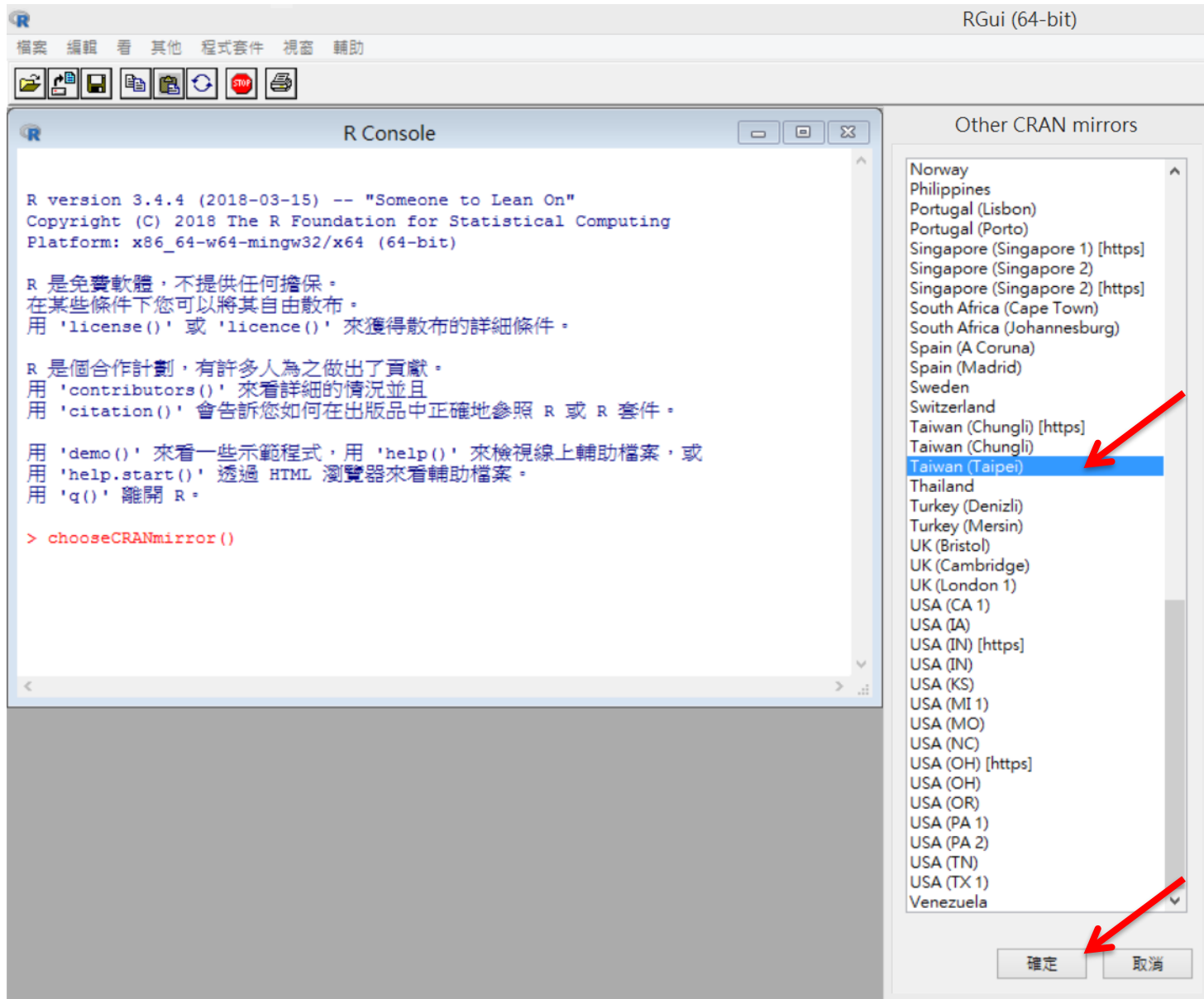
*R Commander*

從 RGui 安裝

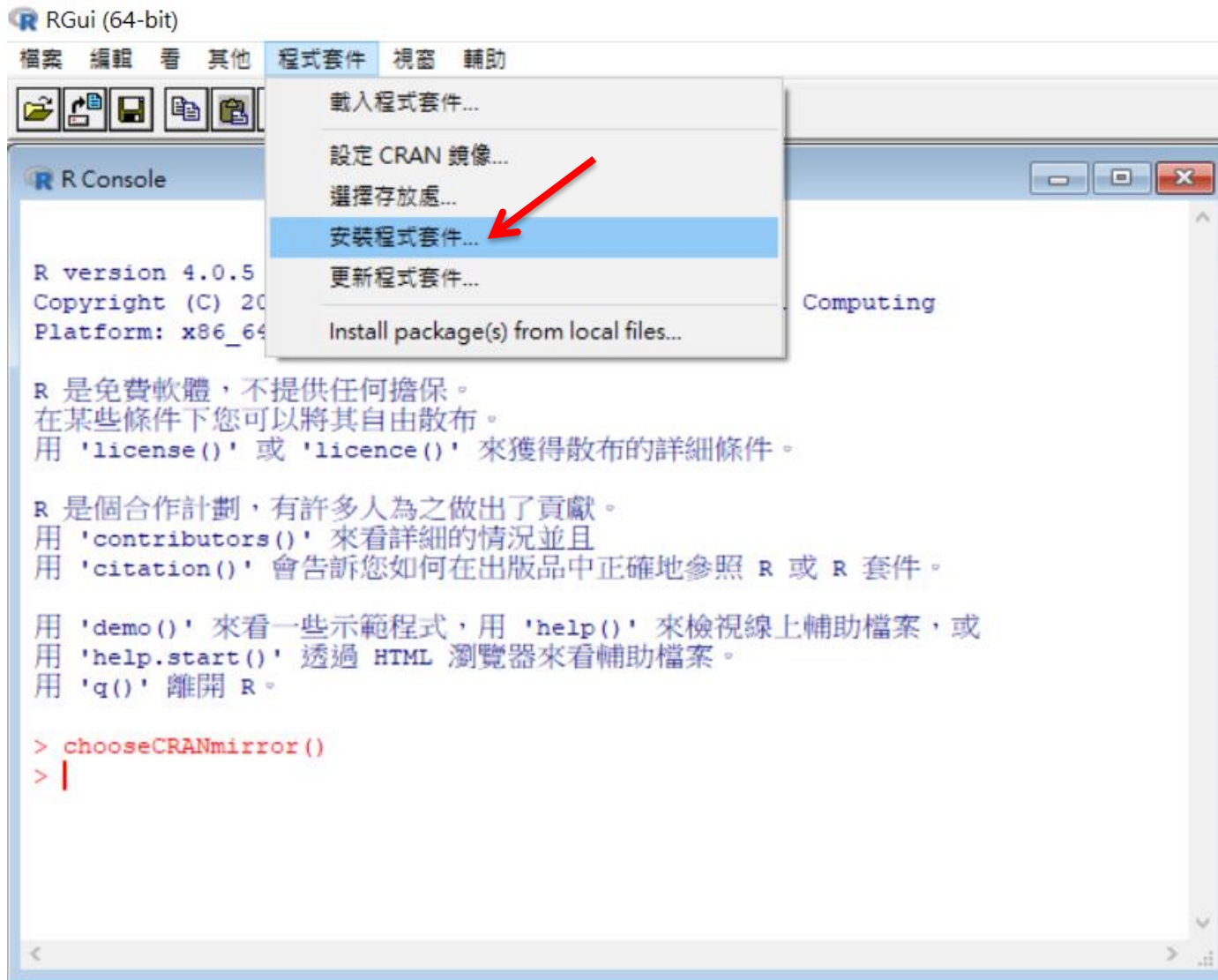
Choose the mirror site (NTU, Taipei, Taiwan)



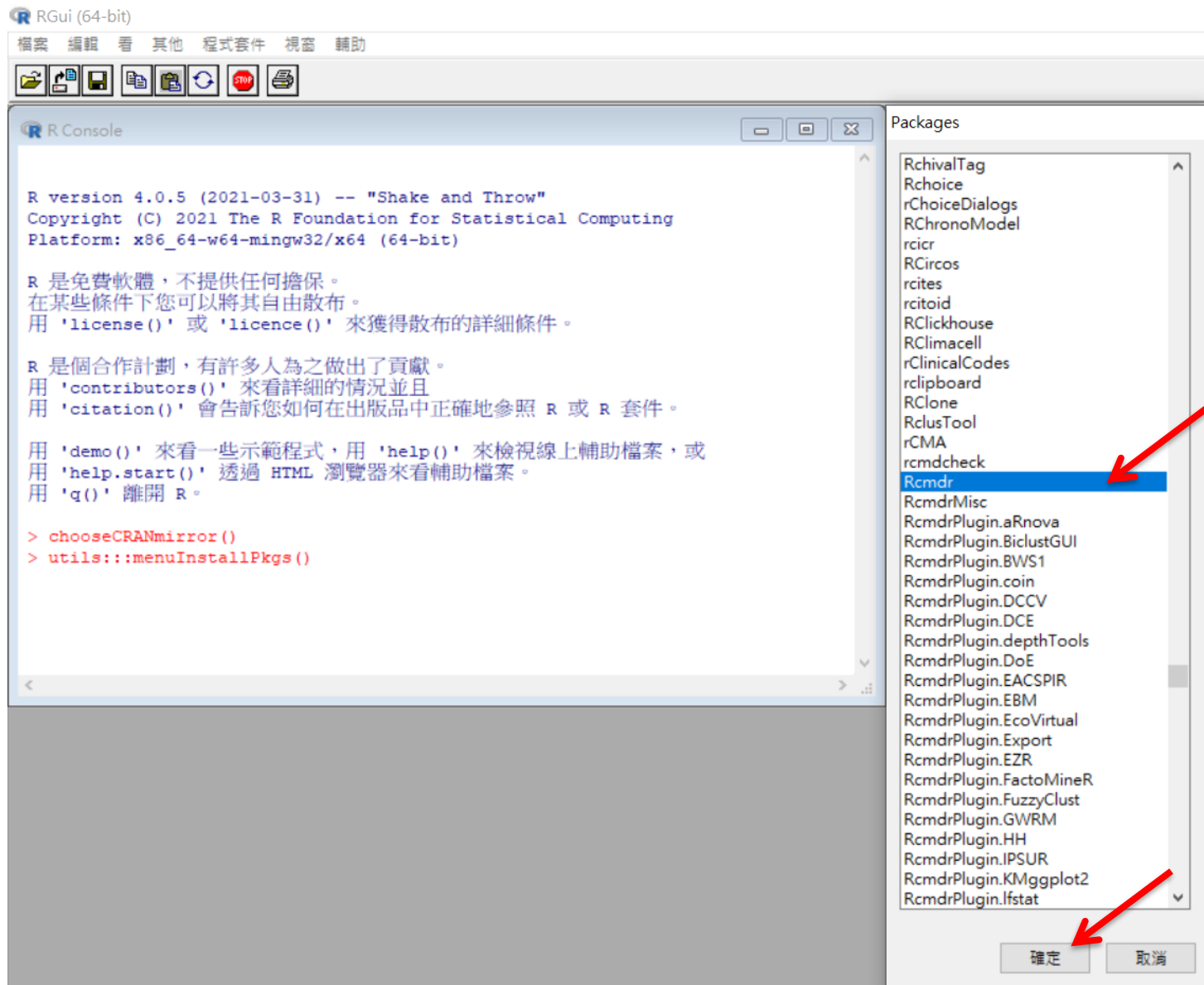
也可 `install.packages("Rcmdr")`



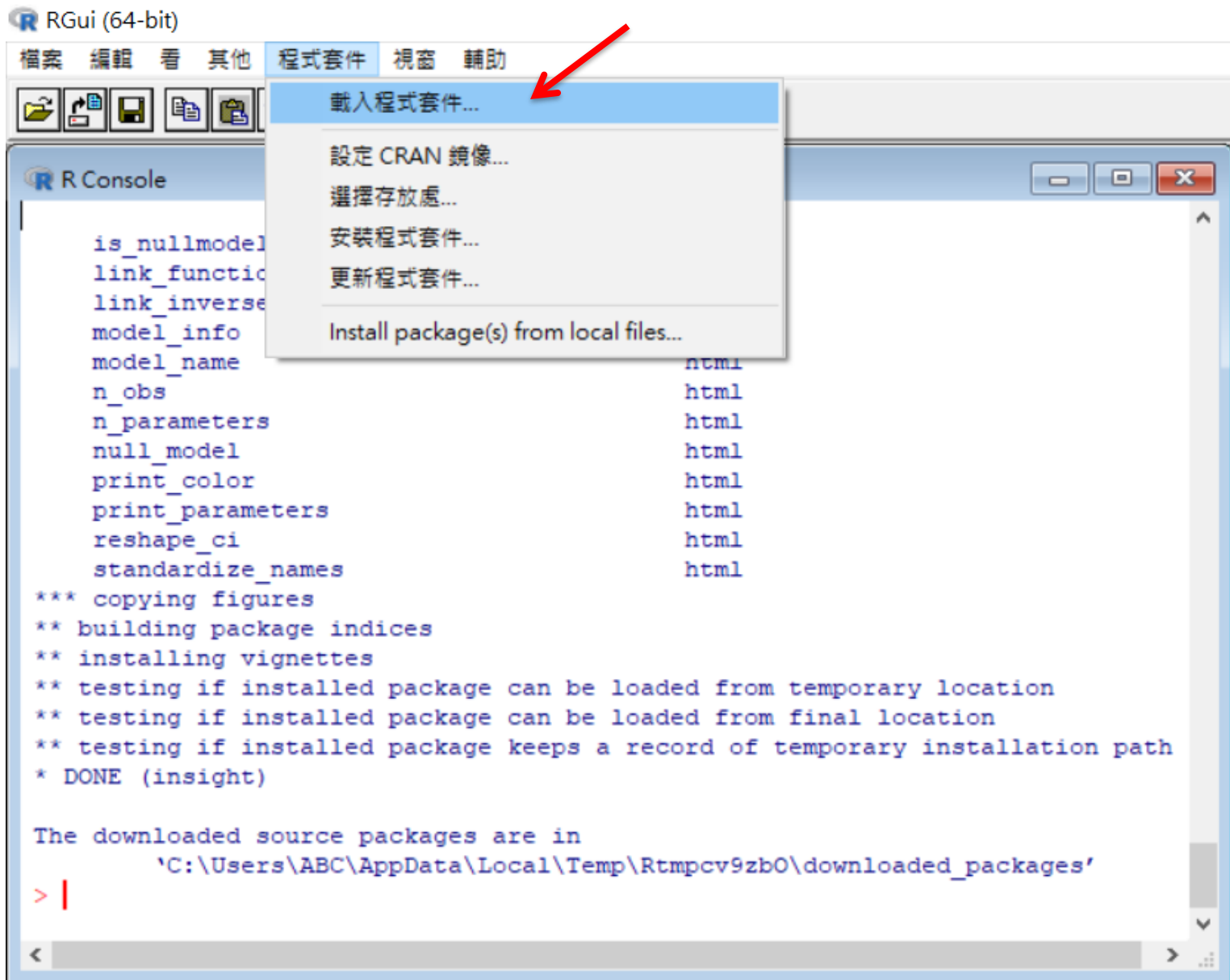
# 安裝 Install R Commander



## 安裝 Rcmdr 會耗時一會兒



## 載入(執行) Run R Commander (Rcmdr)





R Console

```
link_inverse      html
model_info        html
model_name        html
n_obs             html
n_parameters      html
null_model        html
print_color       html
print_parameters  html
reshape_ci        html
standardize_names html
*** copying figures
** building package indices
** installing vignettes
** testing if installed package can be loaded from temporary location
** testing if installed package can be loaded from final location
** testing if installed package keeps a record of temporary installation path
* DONE (insight)

The downloaded source packages are in
      'C:\Users\ABC\AppData\Local\Temp\Rtmpcv9zb0\downloaded_packages'
> local({pkg <- select.list(sort(.packages(all.available = TRUE)),graphics=T$
+ if(nchar(pkg)) library(pkg, character.only=TRUE)})
```

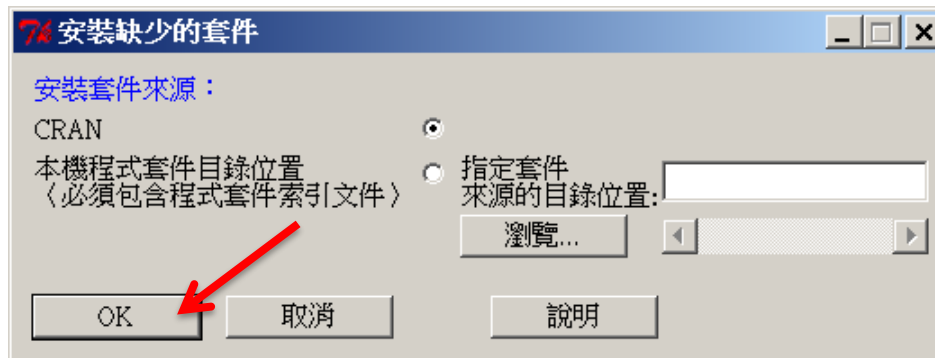
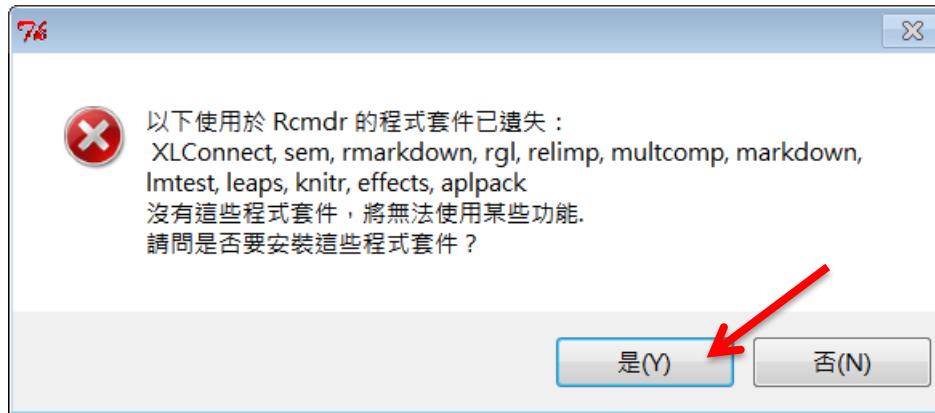
Select one

- proj4
- promises
- proxy
- ps
- purrr
- qpdf
- quantmod
- quantreg
- R6
- rappdirs
- raster
- rcmdcheck
- Rcmdr**
- RcmdrMisc
- RColorBrewer
- Rcpp
- RcppArmadillo
- RcppEigen
- readr
- readstata13
- readxl
- relimp
- rematch
- rematch2
- remotes
- reprex
- rex
- rio
- rlang
- rmarkdown
- roxygen2
- rpart
- rprojroot
- rstax
- rstudioapi
- Rttf2pt1
- rversions
- rvest

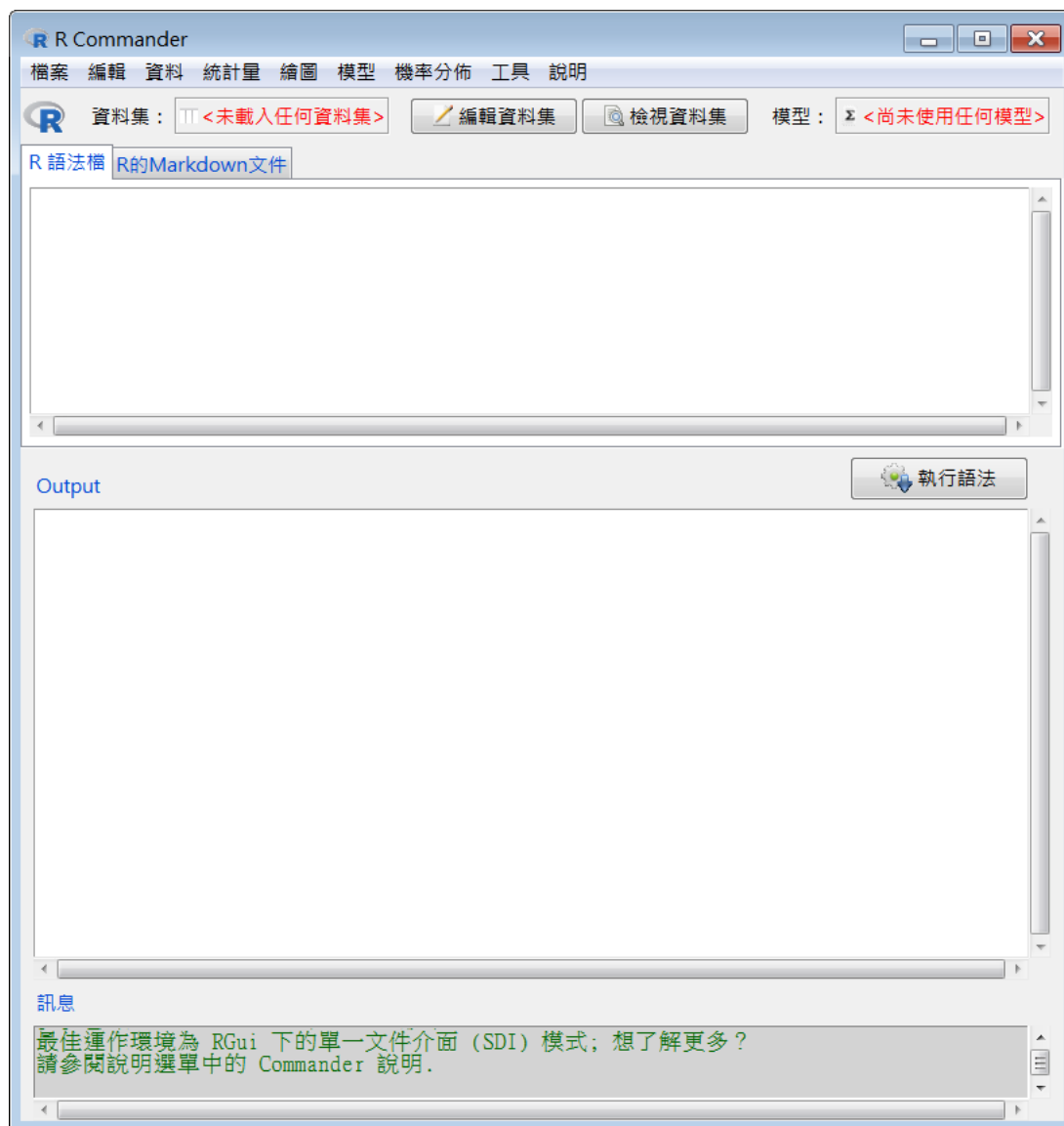
確定 取消



仍缺少一些套件  
電腦會自動安裝



# 請自行摸索 上課不會用到R Commander



# R Commander操作手冊

*Andrew Tang*

*2017/6/7*

- 1 簡介
- 2 下載 R Commander
- 3 啟動 R Commander
- 4 功能瀏覽
- 5 資料輸入
  - 5.1 開新資料集
  - 5.2 匯入資料
  - 5.3 顯示package的資料檔
  - 5.4 載入套件方式
  - 5.5 匯入套件的資料檔
  - 5.6 使用中的資料集功能表

Thanks for  
Your Attention  
!

