

R統計軟體 -安裝與使用

2012/05/01

by

Person Lin



R統計軟體

- R是什麼，為什麼要用R？
- 安裝與設定
- 基本操作
- 安裝套件package
- 資料庫連線設定
- 基本繪圖
- Demo

R是什麼

- R 系統是由 Ross Ihaka 與 Robert Gentleman 從 S 語言所發展出來, 主要是為了統計分析與繪圖
- S 語言早在 1980 年代末期, 由 AT&T 實驗室, Rick Becker, John Chambers, 與 Allan Wilks 發展用來進行統計分析與作圖
- Insightful 公司將 S 商品化, 並加入許多方便的操作介面, 稱為 S-plus
- R 可視為統計數學軟體, 也是一種程式語言

R是什麼

- R是一個開放原始碼 (open-source, GNU General Public License)的統計分析軟體
- R跟S都是以物件導向為主的程式語言
- R的網站 <http://www.r-project.org>
(在Google搜尋R就可以找到)
- R最新版本為2.15.0(released on 2012-03-30)

為什麼要用 R？

- R 與 S-plus 語法大多相近,但是 R 是開放原始碼 (open-source, GNU General Public License)(免費,自由軟體), 目前由一群跨國際的志工人員組成的 R 核心發展組織 (R core-development team) 所維持, 運作與持續更新.
- R 與 S 都是以物件導向為主的程式語言, 透過交互作用方式很容易地進行統計分析與繪圖,這與 SAS, SPSS 的方式有所不同

為什麼要用 R ?

- R 是科學家寫出來的軟體,而且被科學家所使用
- 可以在不同平台上執行 Windows, Mac, Unix, Linux, ...
- 簡單安裝
- R 是免錢的 !
- 有數百個擴充套件(packages)可以安裝
- 有許多文章的發表都順帶包含了 R 的套件

為什麼要用 R ?

- 有很棒的線上說明及文件可以參考
- 還有郵件論壇可以發問(mailing list)
- 很棒的社群(一堆統計專家?) – friendly and helpful people...
- 很容易可以呼叫其他語言的函式庫
Fortran, C, Java, Python... libraries



安裝與設定

- 下載R <http://www.r-project.org>
- 下載RStudio <http://rstudio.org/>
- 安裝R
- 安裝RStudio
- 設定RStudio



The R Project

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

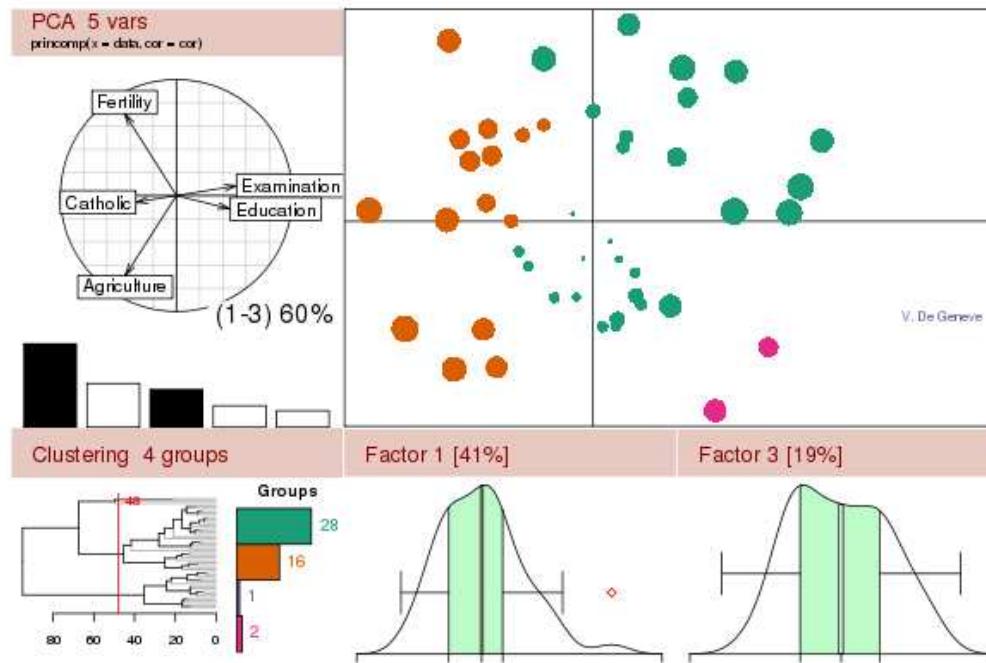
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Getting Started:

- R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and Mac OS. 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 2.15.0 (Easter Beagle) has been released on 2012-03-30.
- R version 2.14.2 (Gift-Giving Season) has been released on 2012-02-29.
- [The R Journal Vol.3/2](#) is available.
- [useR! 2012](#), will take place at Vanderbilt University, Nashville Tennessee, USA, June 12-15, 2012.



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Russia	http://piotrkosott.net/pub/mirrors/CRAN/ http://r.meteo.uni.wroc.pl/	Piotrkosott - Data Storage Center University of Wroclaw
Singapore	http://cran.gis-lab.info/	GIS-Lab.info
Slovakia	http://cran.fyxm.net/ http://cran.phphosts.org/	FYXM.net, Bratislava phphosts.org,Bratislava
South Africa	http://cran.ru.ac.za/	Rhodes University
Spain	http://cran.es.r-project.org/	Spanish National Research Network, Madrid
Sweden	http://ftp.sunet.se/pub/lang/CRAN/	Swedish University Computer Network, Uppsala
Switzerland	http://stat.ethz.ch/CRAN/	ETH Zuerich
Taiwan	http://cran.cs.psu.edu.tw/ http://cran.csie.ntu.edu.tw/	Providence University, Taichung National Taiwan University, Taipei
Thailand	http://mirrors.psu.ac.th/pub/cran/	Prince of Songkla University, Hatyai
UK	http://www.stats.bris.ac.uk/R/ http://cran.ma.imperial.ac.uk/ http://star-www.st-andrews.ac.uk/c	
USA	http://cran.cnr.Berkeley.edu http://cran.stat.ucla.edu/ http://streaming.stat.iastate.edu/CRAN/ http://ftp.ussg.iu.edu/CRAN/ http://rweb.quant.ku.edu/cran/ http://watson.nci.nih.gov/cran_mirror/ http://cran.mtu.edu/ http://cran.wustl.edu/ http://cran.case.edu/ ... more	University of California, Berkeley, CA University of California, Los Angeles, CA Iowa State University, Ames, IA Indiana University University of Kansas, Lawrence, KS National Cancer Institute, Bethesda, MD Michigan Technological University, Houghton, MI Washington University, St. Louis, MO Case Western Reserve University, Cleveland, OH

Taiwan mirror



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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. You can use them. If you do not know what this means,

選擇Windows

- 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 nonlinear modelling, statistical tests, time series analysis,



R for Windows

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Subdirectories:

[base](#)

[contrib](#)

[Rtools](#)

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

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.

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.

請選base
contrib是套件庫



R-2.15.0 for Windows (32/64 bit)

[Download R 2.15.0 for Windows](#) (47 megabytes, 32/64 bit)

[Installation and other instructions](#)

New features in this version: [Windows specific](#), [all platforms](#).

R-2.15.0-win.exe

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](#)

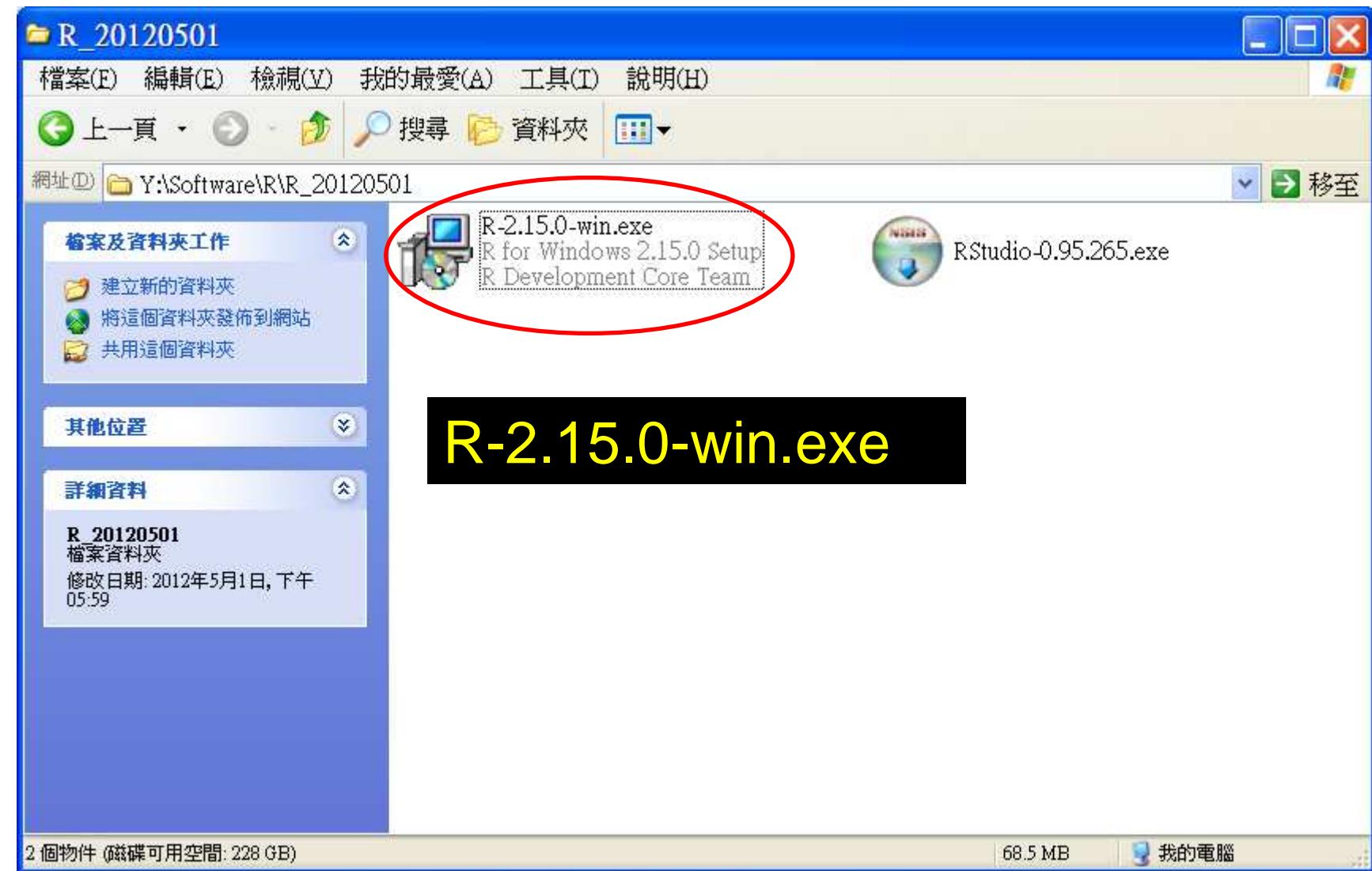
Last change: 2012-03-30, by Duncan Murdoch



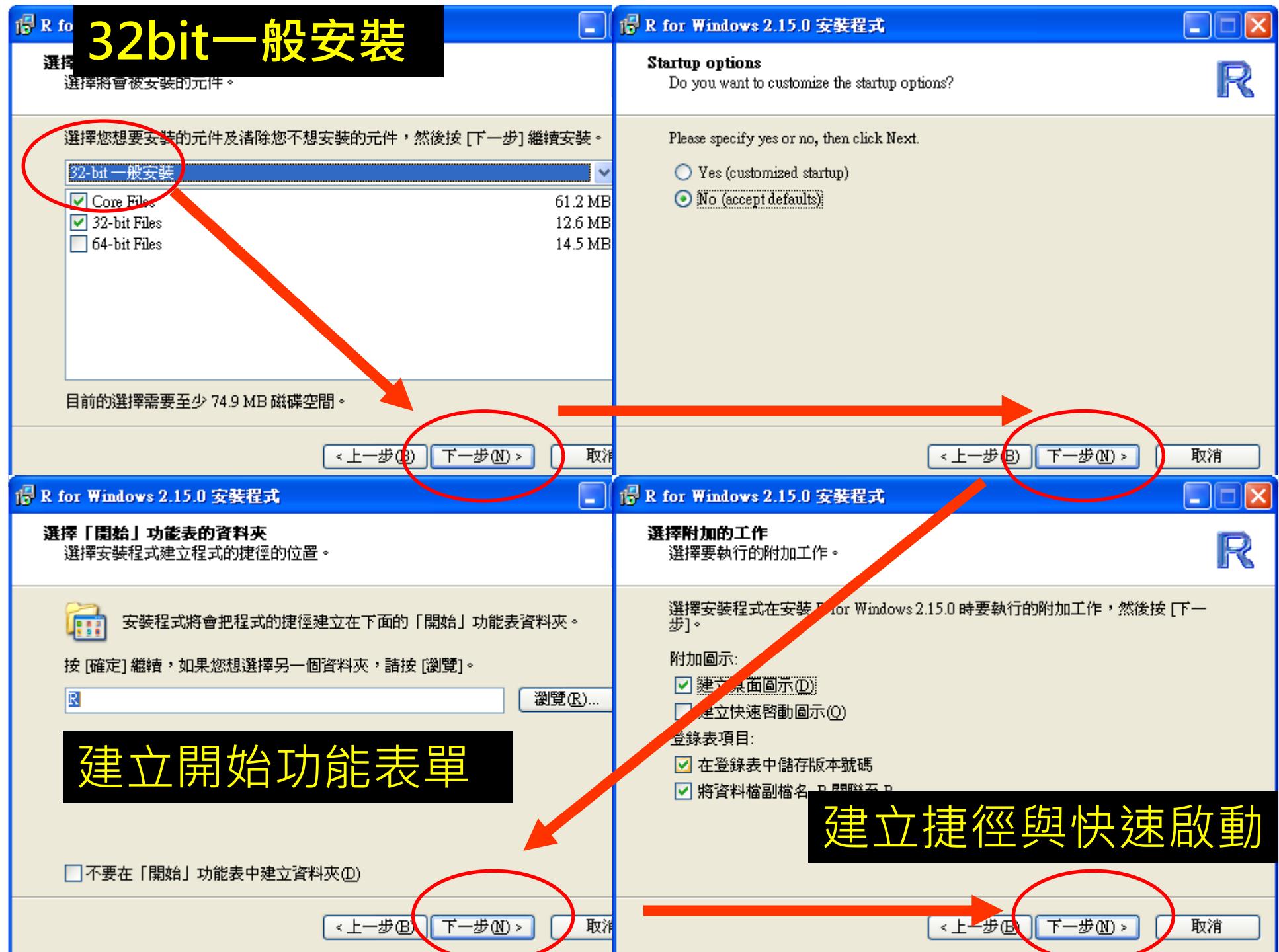
R i386 2.15.0

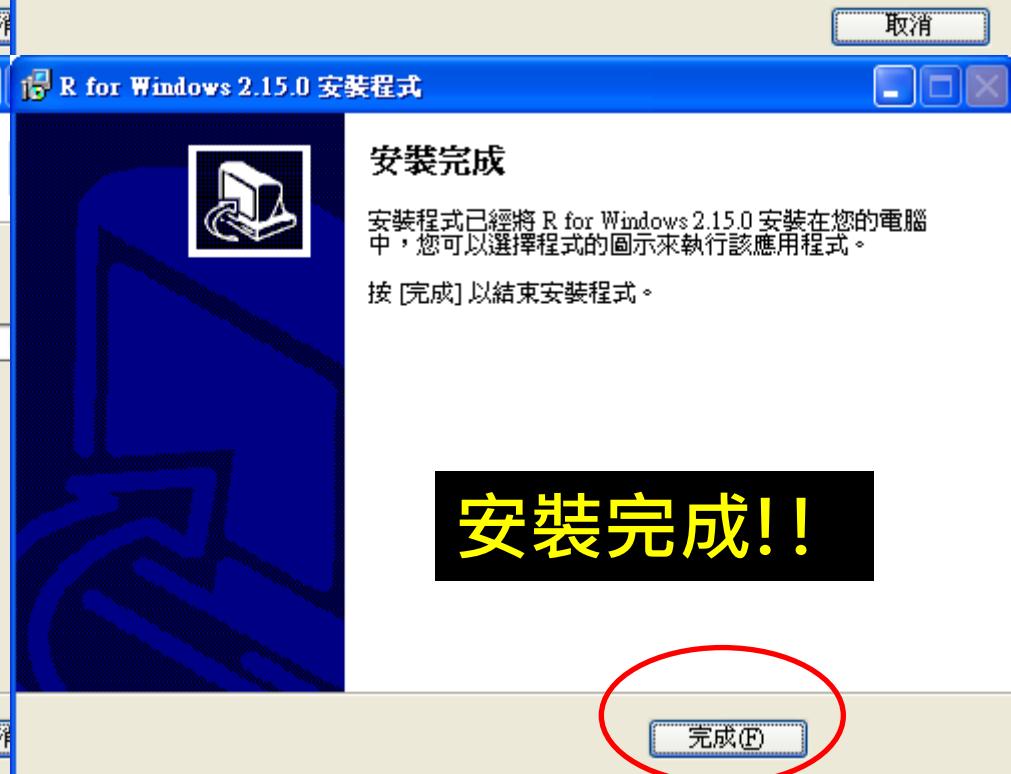
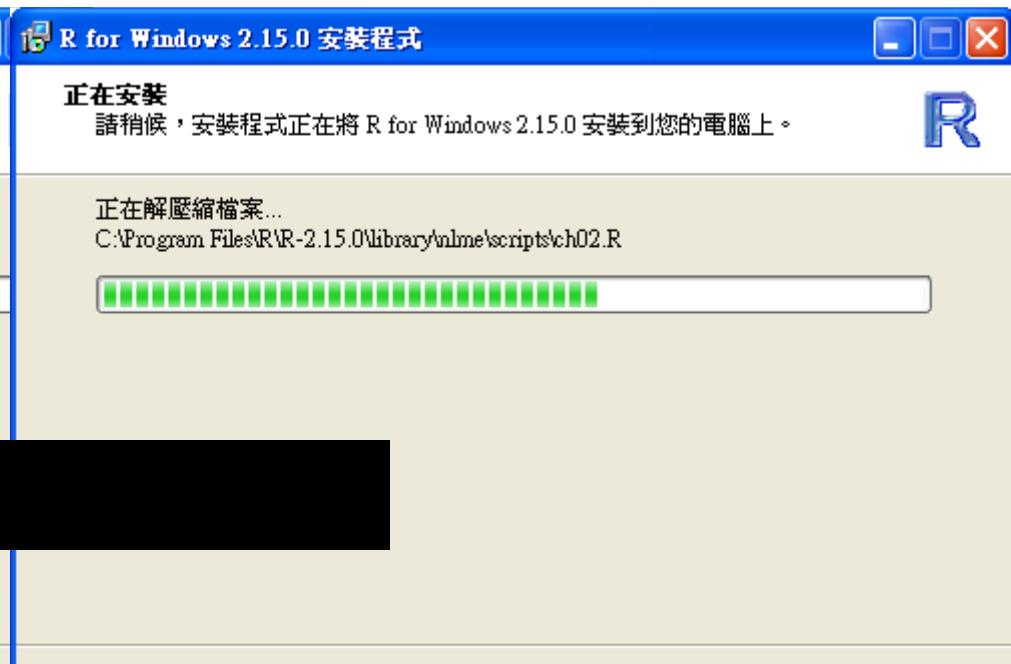


RStudio







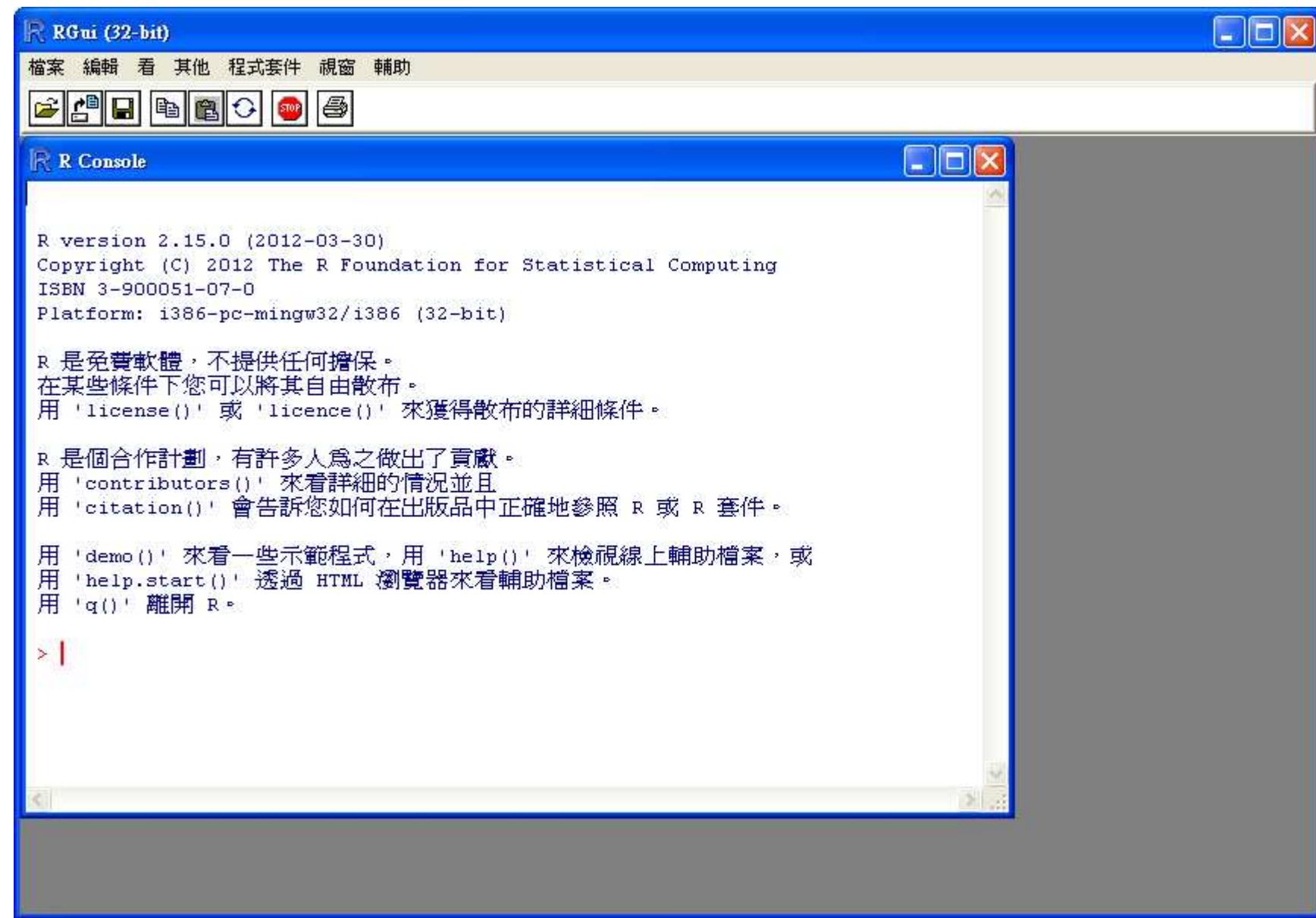




R i386 2.15.0

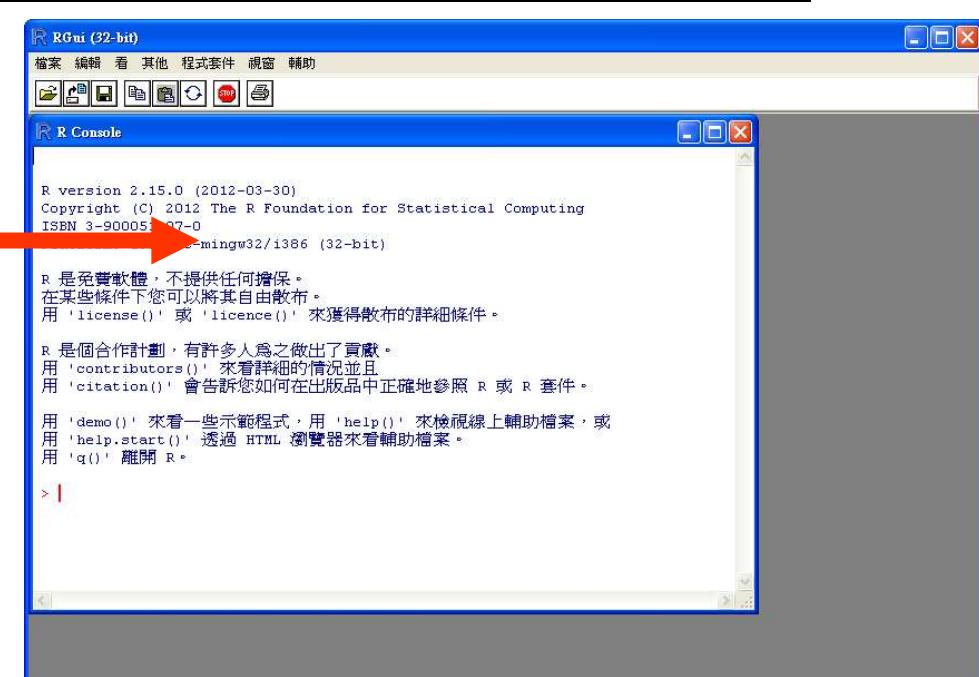
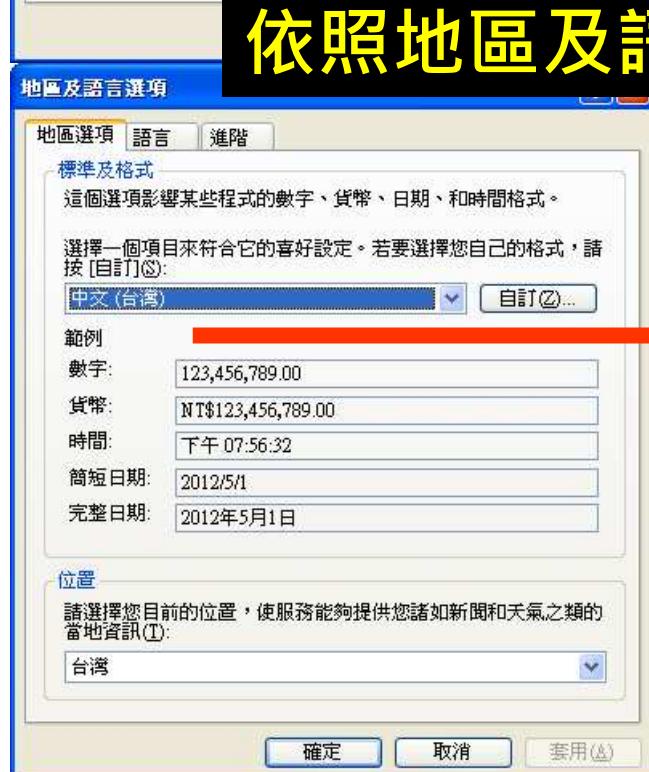
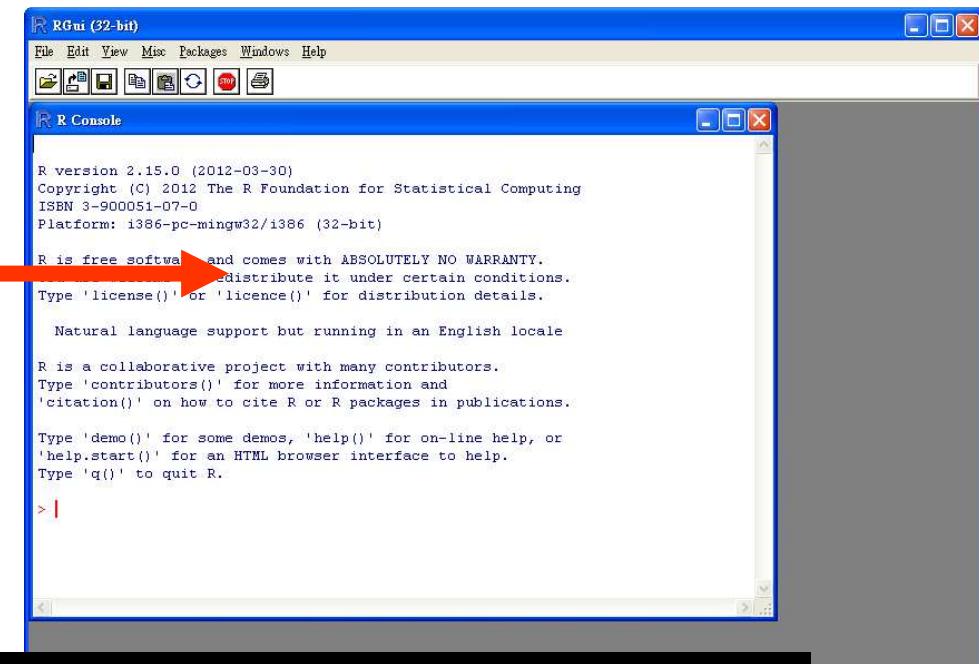


RStudio





R i386 2.15

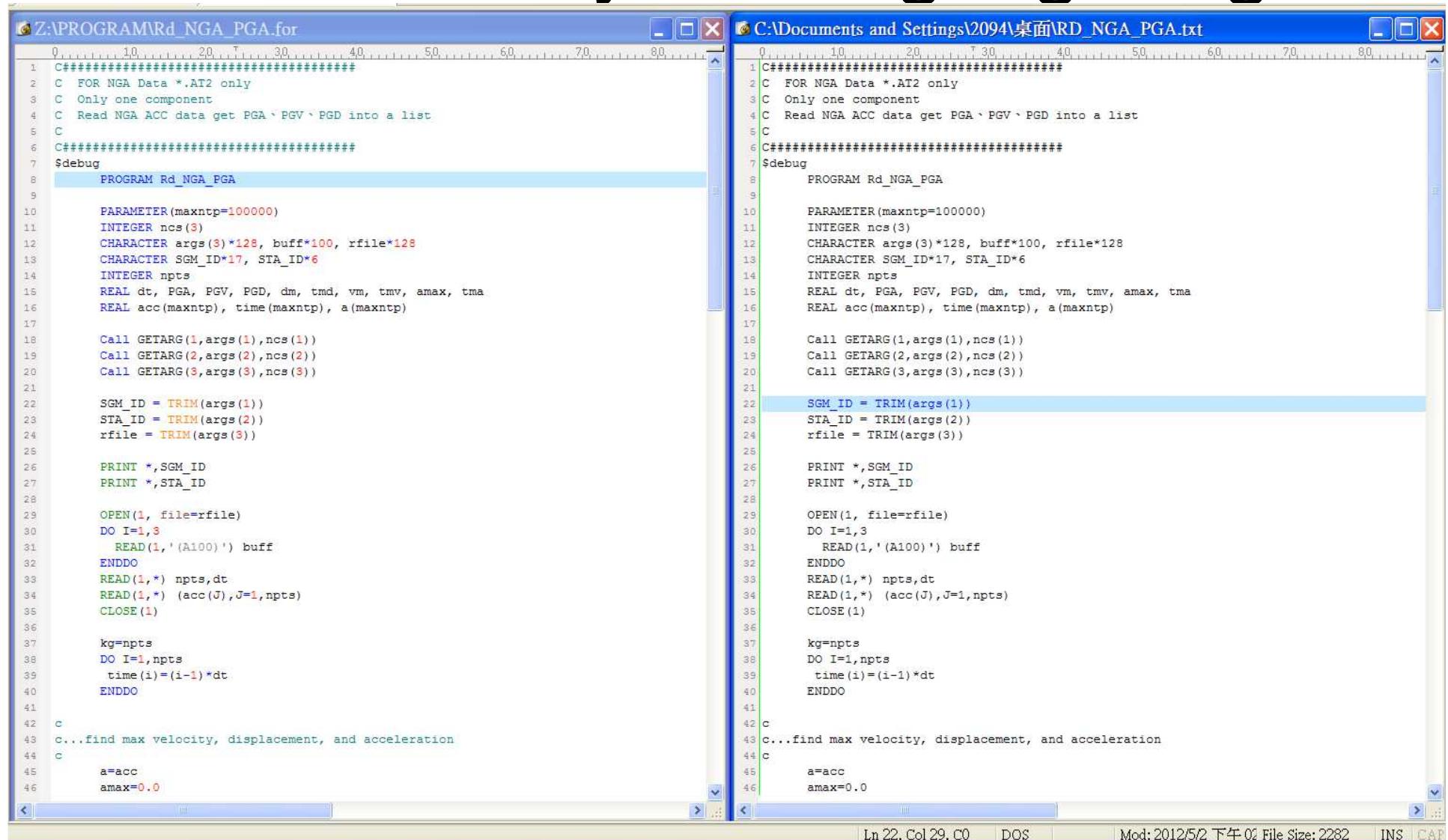


依照地區及語言選項顯示中英文介面

為什麼要裝RStudio？

- 什麼是RStudio？
 - 它是R的IDE，(整合開發環境，Integrated Development Environment的英文縮寫，可輔助開發程式的應用軟體。From Wikipedia)
- 為什麼要用RStudio？
 - 支援語法高亮Syntax highlighting
 - 支援代碼自動完成code completion
 - 工作空間管理與計畫檔案管理
 - 免費、開放原始碼、支援不同作業系統平台(windows、Mac、Linux)、支援版本控制系統(Git、Subversion)

語法高亮Syntax highlighting



The image shows two RStudio code editors side-by-side, both displaying the same Fortran code. The code is used to read NGA ACC data and get PGA, PGV, PGD into a list. It includes declarations for parameters, integer variables, character variables, and arrays. It also contains several calls to GETARG, assignments to variables like SGM_ID, STA_ID, and rfile, and loops for reading data from files. The code is annotated with numerous comments starting with 'C'. The syntax highlighting is color-coded: blue for keywords like PROGRAM, PARAMETER, INTEGER, CHARACTER, DO, READ, CLOSE, PRINT, OPEN, ENDDO, ENDDO; red for strings and character literals; green for comments; and various colors for different types of identifiers and constants.

```

1 C#####
2 C FOR NGA Data *.AT2 only
3 C Only one component
4 C Read NGA ACC data get PGA、PGV、PGD into a list
5 C
6 #####
7 $debug
8     PROGRAM Rd_NGA_PGA
9
10    PARAMETER(maxntp=100000)
11    INTEGER ncs(3)
12    CHARACTER args(3)*128, buff*100, rfile*128
13    CHARACTER SGM_ID*17, STA_ID*6
14    INTEGER npts
15    REAL dt, PGA, PGV, PGD, dm, tmd, vm, tmv, amax, tma
16    REAL acc(maxntp), time(maxntp), a(maxntp)
17
18    Call GETARG(1,args(1),ncs(1))
19    Call GETARG(2,args(2),ncs(2))
20    Call GETARG(3,args(3),ncs(3))
21
22    SGM_ID = TRIM(args(1))
23    STA_ID = TRIM(args(2))
24    rfile = TRIM(args(3))
25
26    PRINT *,SGM_ID
27    PRINT *,STA_ID
28
29    OPEN(1, file=rfile)
30    DO I=1,3
31      READ(1,'(A100)') buff
32    ENDDO
33    READ(1,*) npts,dt
34    READ(1,*) (acc(J),J=1,npts)
35    CLOSE(1)
36
37    kg=npts
38    DO I=1,npts
39      time(i)=(i-1)*dt
40    ENDDO
41
42    C
43    c...find max velocity, displacement, and acceleration
44    C
45    a=acc
46    amax=0.0

```

C:\Documents and Settings\2094\桌面\R\NGA_PGA.txt

```

1 C#####
2 C FOR NGA Data *.AT2 only
3 C Only one component
4 C Read NGA ACC data get PGA、PGV、PGD into a list
5 C
6 #####
7 $debug
8     PROGRAM Rd_NGA_PGA
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10    PARAMETER(maxntp=100000)
11    INTEGER ncs(3)
12    CHARACTER args(3)*128, buff*100, rfile*128
13    CHARACTER SGM_ID*17, STA_ID*6
14    INTEGER npts
15    REAL dt, PGA, PGV, PGD, dm, tmd, vm, tmv, amax, tma
16    REAL acc(maxntp), time(maxntp), a(maxntp)
17
18    Call GETARG(1,args(1),ncs(1))
19    Call GETARG(2,args(2),ncs(2))
20    Call GETARG(3,args(3),ncs(3))
21
22    SGM_ID = TRIM(args(1))
23    STA_ID = TRIM(args(2))
24    rfile = TRIM(args(3))
25
26    PRINT *,SGM_ID
27    PRINT *,STA_ID
28
29    OPEN(1, file=rfile)
30    DO I=1,3
31      READ(1,'(A100)') buff
32    ENDDO
33    READ(1,*) npts,dt
34    READ(1,*) (acc(J),J=1,npts)
35    CLOSE(1)
36
37    kg=npts
38    DO I=1,npts
39      time(i)=(i-1)*dt
40    ENDDO
41
42    C
43    c...find max velocity, displacement, and acceleration
44    C
45    a=acc
46    amax=0.0

```

Ln 22, Col 29, C0 DOS Mod: 2012/5/2 下午 02 File Size: 2282 INS CAP

個人化配置

~/coding-view - RStudio

```

1 # Black Scholes
2 # Option Pricing Model
3
4 # c = option premium
5 # s = current stock price
6 # x = strike price
7 # t.exp = expiration time
8 # t = current time
9 # r = risk free rate
10 # sigma = volatility
11
12 # price of call option
13 callprice.bs <- function(s, x, t.exp, t, r, sigma) {
14   d.pos <- log(s/x) + (r + 0.5 * sigma^2) * (t.exp - t)
15   d.neg <- d.pos / (sigma * (t.exp - t)^0.5)
16   s * pnorm(d.pos) - x * exp(-r * (t.exp - t)) *
17   pnorm(d.neg)
18 }
19
20 # price of put option
21 putprice.bs <- function(s, x, t.exp, t, r, sigma) {
22   c <- callprice.bs(s, x, t.exp, t, r, sigma)
23   c - s + x * exp(-r * (t.exp - t))
24 }
25
26 vol.implied <- function(c, s, x, t.exp, t, r,
27   sigma.init = 0.05) {
28   dif <- 1
29   sigma0 <- sigma.init
30   while(dif > 0.001) {
31     callprice.bs(s, x, t.exp, t, r, sigma0)
32     putprice.bs
33     vnl_implied <- t.exp * t, r, sigma0)
34     vega
35     sigma0 - (c0 - c)/v0
36   }
37 }
38 
```

The normal distribution has density

~/customize - RStudio

```

1 priceMat <- matrix(NA, ncol=nsteps+1, nrow=2^nsteps+1,
2   dimnames=list(as.character(nsteps:nsteps),
3     as.character(0:nsteps)))
4 priceMat["0", "0"] <- 50
5 for(column in 1:nsteps) {
6   for(rownum in seq(column, -column, by=-2)) {
7     if(rownum == 0) {
8       priceMat[paste(rownum),
9       paste(column)] <- priceMat[paste(rownum-1),
10      paste(column-1)]*u
11    } else {
12      priceMat[paste(rownum),
13      paste(column)] <- priceMat[paste(rownum+1),
14      paste(column+1)]*d
15    }
16  }
17
18 probMat <- matrix(0, ncol=nsteps+1, nrow=2^nsteps + 1,
19   dimnames=list(as.character(nsteps:nsteps),
20     as.character(0:nsteps)))
21 probMat["0", "0"] <- 1
22 for(column in 1:nsteps) {
23   for(rownum in seq(column, -column, by=-2)) {
24     if(rownum == -column) {
25       probMat[paste(rownum),
26       paste(column)] <- probMat[paste(column-1),
27       paste(column-1)]*p + probMat[paste(column),
28       paste(column)]
29     }
30     if(!rownum == column) {
31       probMat[paste(rownum),
32       paste(column)] <- probMat[paste(column+1),
33       paste(column+1)]*(1-p) + probMat[paste(column),
34       paste(column)]
35     }
36   }
37 }
38 
```

Price Lattice

up/down steps

time steps

自定版面配置

自定版面主題配色

Windows

```

library(ggplot2)
library(diamonds)
summary(diamonds)
summary(diamonds$price)
aveSize <- round(mean(diamonds$carat), 4)
clarity <- levels(diamonds$clarity)
p <- ggplot(diamonds, aes(carat, price))
p + geom_point(aes(color = clarity)) +
  ggtitle("Diamond Pricing")
  
```

Windows

```

Min. : 0.000 Min. : 0.000 Min. : 0.000
1st Qu.: 4.710 1st Qu.: 4.720 1st Qu.: 2.910
Median : 5.700 Median : 5.710 Median : 3.530
Mean : 5.731 Mean : 5.735 Mean : 3.539
3rd Qu.: 6.540 3rd Qu.: 6.540 3rd Qu.: 4.040
Max. :10.400 Max. :10.800 Max. :31.800
> summary(diamonds$price)
Min. 1st Qu. Median 3rd Qu. Max.
326 950 2401 3933 5324 18820
> aveSize <- round(mean(diamonds$carat), 4)
> clarity <- levels(diamonds$clarity)
  
```

Ubuntu

```

# User Analysis
setwd("~/analysis")
source("prep.R")
library(plyr)
library(lattice)
library(ggplot2)

# Import data set
rawdata <- read.csv("stats.csv")
totalUsers <- dim(rawdata)[1]

# Clean data set
clean <- prepareStats(rawdata)
active <- subset(clean, active == 1)
countActive <- sum(active)
mean(activeAge)
  
```

Ubuntu

```

# User Analysis
setwd("~/analysis")
source("prep.R")
library(plyr)
library(lattice)
library(ggplot2)

# Import data set
rawdata <- read.csv("stats.csv")
totalUsers <- dim(rawdata)[1]

# Clean data set
clean <- prepareStats(rawdata)
active <- subset(clean, active == 1)
countActive <- sum(active)
mean(activeAge)
  
```

Mac OSX

```

# Home Prices In Mid-West
homes <- read.csv("homePriceData.csv")
View(homes)
names(homes)
summary(homes$price)
summary(homes$age)
states <- levels(homes$state)
avePrice <- round(mean(homes$price), 2)
aveAge <- round(mean(homes$age), 0)
  
```

Mac OSX

Subsetting Vectors, Matrices and Data Frames

Description

Return subsets of vectors, matrices or data frames which meet conditions.

Usage

```

> homes <- read.csv("homePriceData.csv")
> View(homes)
> names(homes)
[1] "city"      "state"      "price"      "age"
[5] "condition" "remodeling" "neighborhood"
> summary(homes$price)
Min. 1st Qu. Median 3rd Qu. Max.
  7290    12000   15000   18000   50000
  
```

Web browser

Web browser

```

# Black Scholes
# Option Pricing Model
# s = current stock price
# x = strike price
# r = risk free rate
# sigma = volatility
# t.exp = expiration time
# t = current time
# price of call option
callprice.bs <- function(s, x, r, sigma, t.exp, t) {
  d.pos <- log(s/x) + (r + 0.5 * sigma^2) * (t.exp - t)
  d.neg <- d.pos / (sigma * (t.exp - t)^0.5)
  s * pnorm(d.pos) - x * exp(- r * (t.exp - t)) * pnorm(d.neg)
}

# price of put option
c <- callprice.bs(s, x, t.exp, t, r, sigma)
c - s * exp(- r * (t.exp - t))
  
```

Web browser

```

# price of call option
callprice.bs <- function(s, x, r, sigma, t.exp, t) {
  d.pos <- log(s/x) + (r + 0.5 * sigma^2) * (t.exp - t)
  d.neg <- d.pos / (sigma * (t.exp - t)^0.5)
  s * pnorm(d.pos) - x * exp(- r * (t.exp - t)) * pnorm(d.neg)
}
  
```

~/workbench - RStudio

R 3.86.2

程式碼編輯區

```

1 # User Trend Analysis
2 # Breakdown of active and non-active users
3
4 library(plyr)
5 library(ggplot2)
6
7(userData <- read.csv("userDataTrends.csv"))
8(userData <- subset(userData, select = -c(id, group)))
9(userData$active <- as.factor(userData[,1]))
10
11 states <- levels(userData$state)
12
13 names(userData)
14 count(userData, "acti")
15 View(userData)
16
17 summary(subset(userData, active == 1)$state)
18 summary(subset(userData, active == 0)$state)
19
20(qplot(state, age, color = active, data = userData,
21      main = "Breakdown of Users by Age and State") +
22      opts(plot.title = theme_text(size = 19))
23
23:1 f (Top Level) R Script

```

程式執行區

```

active....1 freq
1 FALSE 310
2 TRUE 270
> View(userData)
> summary(subset(userData, active == 1)$state)
IA IL IN KS MI MN MO ND NE OH SD
19 26 21 21 27 49 22 26 19 16 24
> summary(subset(userData, active == 0)$state)
IA IL IN KS MI MN MO ND NE OH SD
26 27 18 31 27 49 22 32 19 33 26
> qplot(state, age, color = active, data = userData,
+       main = "Breakdown of Users by Age and State") +
+       opts(plot.title = theme_text(size = 19))
>

```

記憶體中的物件管理

Workspace History

Data

userData 580 obs. of 5 variables

Values

active integer[270]

states character[11]

Functions

split(group, location, ...)

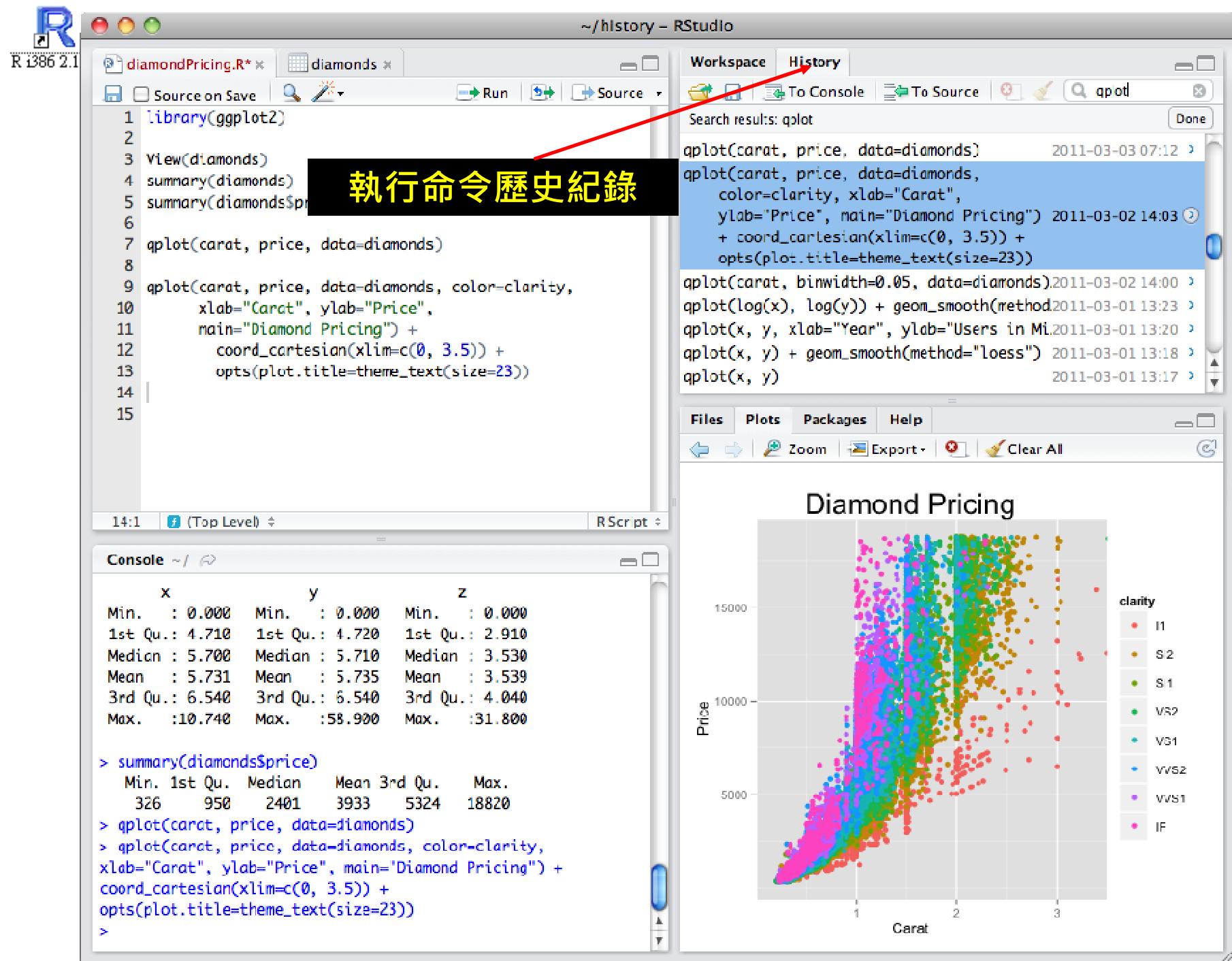
繪圖視窗

Breakdown of Users by Age and State

active

0

1



R 3.8.6 2.15 ~/completion - RStudio

homePrices.R* homes

Source on Save Run Source

```
1 # Home Prices In Mid-West
2
3 homes <- read.csv("homePriceData.csv")
4 View(homes)
5 names(homes)
6 summary(homes$price)
7 summary(homes$age)
8
9 states <- levels(homes$state)
10 avePrice <- round(mean(homes$price),2)
11 aveAge <- round(mean(homes$age), 0)
12
13
14
```

程式碼自動完成

Console ~ /

```
> homes <- read.csv("homePriceData.csv")
> View(homes)
> names(homes)
[1] "city"      "state"       "price"       "age"
[5] "condition" "remodeling"  "neighborhood"
> summary(homes$price)
Min.    : 75290
1st Qu.: 110000
Median : 140000
3rd Qu.: 180000
Max.    : 800000
> subset {base}
75290 subset [base]
```

Workspace History

Load Save Import Dataset Clear All

Data

homes	580 obs. of 7 variables
Values	
aveAge	36
avePrice	416405.55
states	character[11]

Files Plots Packages Help

subset {base} R Documentation

R: Subsetting Vectors, Matrices and Data Frames Find in Topic

Subsetting Vectors, Matrices and Data Frames

Description

Return subsets of vectors, matrices or data frames which meet conditions.

Usage

subset(x, ...,

Return subsets of vectors, matrices or data frames which meet conditions.

x,
p = FALSE, ...)
frame'
subset(x, subset, select, drop = FALSE, ...)

Press F1 for additional help

The screenshot illustrates the RStudio interface with several panels: a top bar with the R logo and version information; a left sidebar with tabs for 'homePrices.R*' and 'homes'; a main editor area with R code; a workspace panel showing data frames 'homes' and 'values' with their respective statistics; a bottom panel for documentation, currently showing the 'subset' function; and a console at the bottom displaying the execution of the R script. A large yellow box highlights the text '程式碼自動完成' (Code Completion) in the center of the screen, with a red arrow pointing from the 'subset {base}' entry in the documentation panel towards it.



計畫管理

```
mean.R *  dataframe.R *  grob.R *  NEWS *  Source *  Project: (None) *
```

```
123 as.data.frame <- function(x, row.names = NULL, optional = FALSE)
124 {
125   if(is.null(x)) # can't assign class to NULL
126   return(as.data.frame(list()))
127   UseMethod("as.data.frame")
128 }
129
130 as.data.frame.default <- function(x, ...
131   stop(gettextf("cannot coerce class '%s' into a data frame"))
132   deparse(class(x)),
133   domain = NA
134
135 ### Here are methods that are in a form suitable for combining into a data frame
136 ### are in a form suitable for combining into a data frame
137
138 as.data.frame.data.frame <- function(x, ...
139 {
140   cl <- oldClass(x)
141   i <- match("data.frame", cl)
142   if(i > 1L)
143     class(x) <- cl[ - (1:i - 1L)]
144   if(is.null(row.names))
145     nr <- .row.names.info(x, 2L)
146   if(length(row.names) == nr)
147     attr(x, "row.names") <- row.names
148   else stop(gettextf("invalid 'row.names', length %d for a
149   data frame, got %d", length(row.names), nr), domain
150   )
151   x
152 }
153
154 ## prior to 1.8.0 this coerced names - PR#3280
155 as.data.frame.list <-
156   function(x, row.names = NULL, optional = FALSE, ...)
157   as.data.frame(x, ...
158   , row.names = row.names, optional = optional, ...
159   , class = "data.frame", domain = domain)
```

Console

新增計畫

```
mean.R *  dataframe.R *  grob.R *  NEWS *  Source *  Project: (None) *
```

```
123 as.data.frame <- function(x, row.names = NULL, optional = FALSE)
124 {
125   if(is.null(x)) # can't assign class to NULL
126   return(as.data.frame(list()))
127   UseMethod("as.data.frame")
128 }
129
130 as.data.frame.default <- function(x, ...
131   stop(gettextf("cannot coerce class '%s' into a data frame"))
132   deparse(class(x)),
133   domain = NA
134
135 ### Here are methods ensuring that the arguments to "data
136 ### are in a form suitable for combining into a data frame
137
138 as.data.frame.data.frame <- function(x, row.names = NULL, ...
139 {
140   cl <- oldClass(x)
141   i <- match("data.frame", cl)
142   if(i > 1L)
143     class(x) <- cl[ - (1:i - 1L)]
144   if(is.null(row.names)){
145     nr <- .row.names.info(x, 2L)
146     if(length(row.names) == nr)
147       attr(x, "row.names") <- row.names
148     else stop(gettextf("invalid 'row.names', length %d for a
149     data frame, got %d", length(row.names), nr), domain
150     )
151   x
152 }
153
154 ## prior to 1.8.0 this coerced names - PR#3280
155 as.data.frame.list <-
156   function(x, row.names = NULL, optional = FALSE, ...)
157   as.data.frame(x, ...
158   , row.names = row.names, optional = optional, ...
159   , class = "data.frame", domain = domain)
```

Files Plots Packages Help

New Folder Delete Rename More

Name	Size	Modified
..		
ChangeLog	0 bytes	Mar 17, 2010, 10:43 AM
config.site	9.1 KB	Mar 29, 2011, 6:02 PM
configure	1.3 MB	Dec 14, 2011, 6:06 PM
configure.ac	84.2 KB	Nov 9, 2011, 6:05 PM
COPYING	17.6 KB	Mar 17, 2010, 10:43 AM
doc		
etc		
INSTALL	1.7 KB	Mar 17, 2010, 10:43 AM
m4		
Makeconf.in	4.3 KB	Mar 17, 2011, 7:05 PM
Makefile.fw	7 KB	Oct 2, 2011, 6:02 PM
Makefile.in	7.1 KB	Oct 2, 2011, 6:02 PM
NEWS	195.7 KB	Dec 22, 2011, 3:05 AM

Console

於計畫之間切換

RStudio的下載與安裝

[Home](#) [Screenshots](#) [Download](#) [Docs](#) [Support](#) [Development](#) [Blog](#)

Welcome to RStudio

RStudio™ is a free and open source integrated development environment (IDE) for R. You can run it on your desktop (Windows, Mac, or Linux) or even over the web using RStudio Server.

[Download RStudio
for Windows, Mac or Linux](#)

The screenshot shows the RStudio interface. On the left, the script editor displays R code for loading the ggplot2 library, viewing the diamonds dataset, calculating average size, and creating a scatter plot of Price vs. Carat by Clarity. The workspace panel shows the diamonds dataset has 53940 observations and 10 variables, with average size being 0.7979 and clarity being a character vector of length 8. The plot viewer shows a scatter plot titled "Diamond Pricing" with Price on the y-axis (ranging from 0 to 18000) and Carat on the x-axis (ranging from 0 to 3). The points are colored by Clarity, with categories including I1, SI2, SI1, VS2, VS1, VVS2, VVS1, and IF.

Screencast
RStudio in 2 minutes



Download RStudio v0.95



If you run R on your desktop:



OR



If you run R on a Linux server and want to enable users to remotely access RStudio using a web browser:



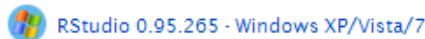


Download RStudio Desktop

RStudio v0.95 — Release Notes

RStudio requires R 2.11.1 (or higher). If you don't already have R, you can download it [here](#).

Recommended For Your System



[RStudio 0.95.265 - Windows XP/Vista/7](#)

All Platforms

[RStudio 0.95.265 - Windows XP/Vista/7](#)

[RStudio 0.95.265 - Mac OS X 10.6+](#)

[RStudio 0.95.265 - Debian 6+/Ubuntu 10.04+ \(32-bit\)](#) 45.5 MB 2012-04-05 [Saa604f0claa34f5ef9dd5e65558ab0e](#)

[RStudio 0.95.265 - Debian 6+/Ubuntu 10.04+ \(64-bit\)](#) 26.1 MB 2012-04-05 [a38a28626bdf66f7698058ace601a4f9](#)

[RStudio 0.95.265 - Fedora 13+/openSUSE 11.4+ \(32-bit\)](#) 26.4 MB 2012-04-05 [df5a94014107a4e4dca5cfa239913400](#)

[RStudio 0.95.265 - Fedora 13+/openSUSE 11.4+ \(64-bit\)](#) 26 MB 2012-04-05 [ac8b616a4fe171d5bd76b6797972c827](#)

[RStudio 0.95.265 - Fedora 13+/openSUSE 11.4+ \(64-bit\)](#) 26.2 MB 2012-04-05 [2f472e4488bf242ff8f7addcda33410a](#)

RStudio-0.95.265.exe

Zip/Tarball

If you need an installer-less version of RStudio (for example, if you don't have administrative/root privileges on your computer) you can download a zip or tarball containing the RStudio binaries. [Show zip/tarball downloads](#)

Source Code

A tarball containing source code for RStudio v0.95.265 can be downloaded from [here](#).



RStudio Documentation

Using RStudio

- [Working in the Console](#)
- [Editing and Executing Code](#)
- [Navigating Code](#)
- [Using Projects](#)
- [Command History](#)
- [Working Directories and Workspaces](#)
- [Customizing RStudio](#)
- [Keyboard Shortcuts](#)

RStudio Server

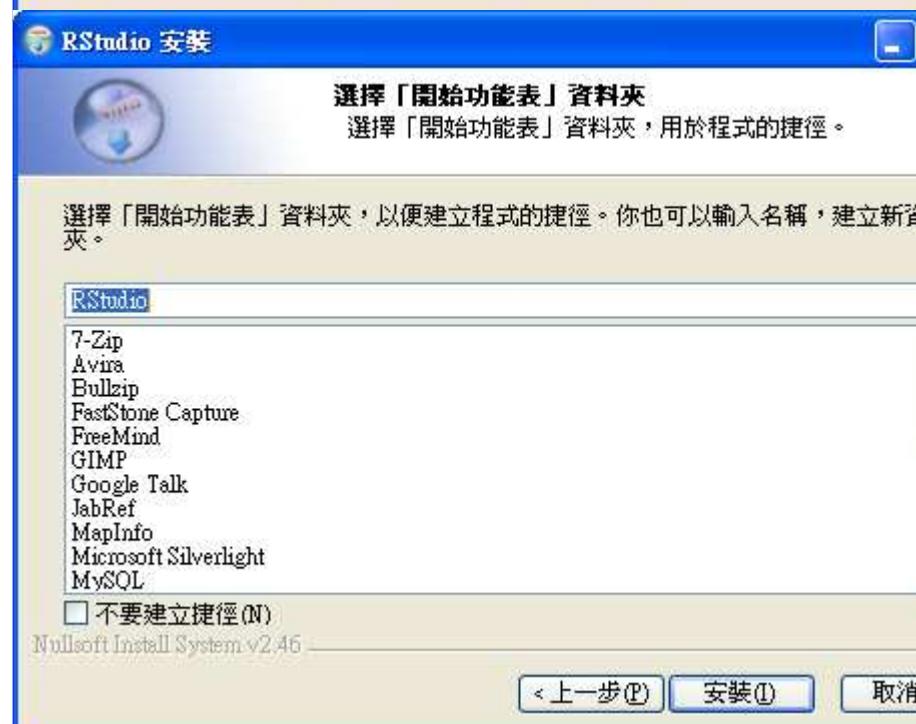
- [Getting Started](#)
- [Configuring the Server](#)
- [Managing the Server](#)
- [Running with a Proxy](#)

Advanced Topics

- [Version Control](#)
- [Interactive Plotting with Manipulate](#)
- [Using Different Versions of R](#)
- [Character Encoding](#)
- [Optimizing your Browser for RStudio](#)
- [Uploading and Downloading Files](#)

More

- [About RStudio](#)
- [Release Notes](#)
- [Frequently Asked Questions](#)
- [Getting Help with R](#)





R i386 2.15.0



RStudio



可以開始用R寫程式啦!!

基本操作

- `help.start()` 線上說明
- `help(mean)` 指令說明
`?mean`
- `example(plot)` 範例展示
- `data()` 顯示目前可用的資料
- `objects(), ls()` 顯示目前所有的物件
- `rm()` 移除物件
- **注意！！R 會區分大小寫不同！！**

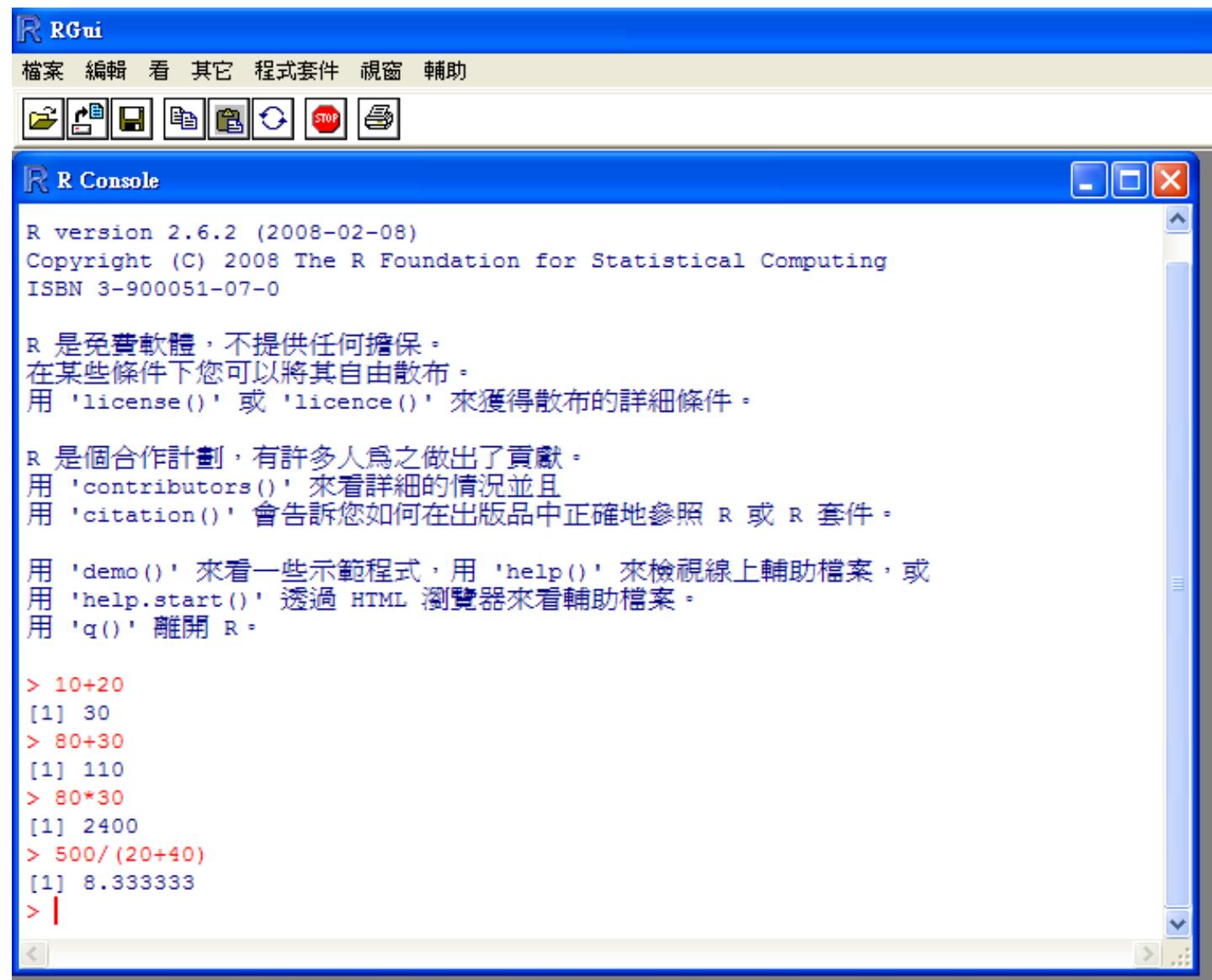
變數的分類

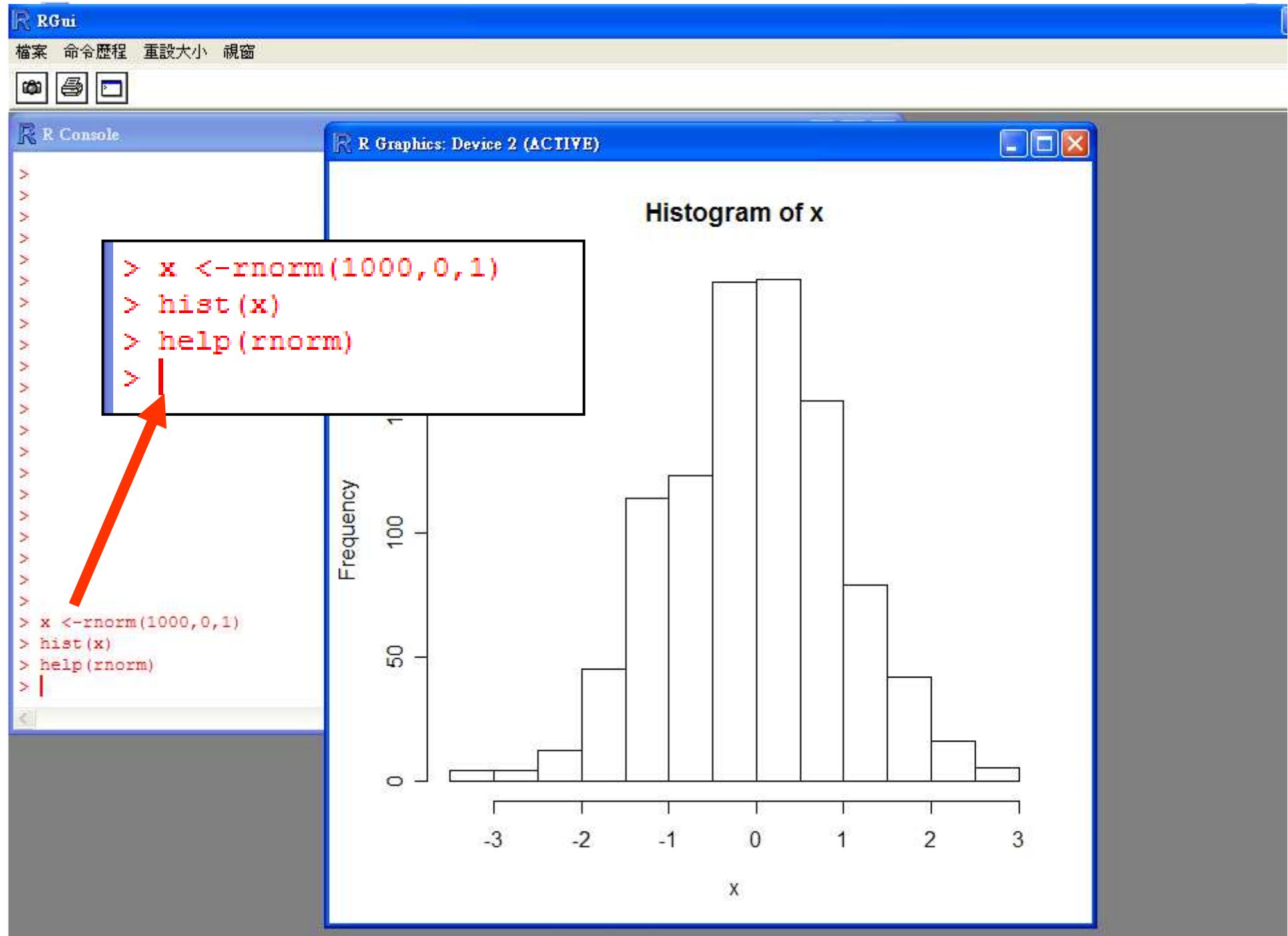
- "numeric", 實數向量
- "integer", 整數向量 (有時需特別指定)
- "logical", 邏輯變數向量 (true or false), 以 TRUE (T) 或 FALSE (F) 呈現,(也可以是 1 (T) 與 0 (F)).
- "complex", 複數向量
- "character", 文字或字串向量, 通常輸入時, 在文字或字串兩側加上雙引號.
- "list", 列表, 是一個由 R (S) 物件所組成的向量

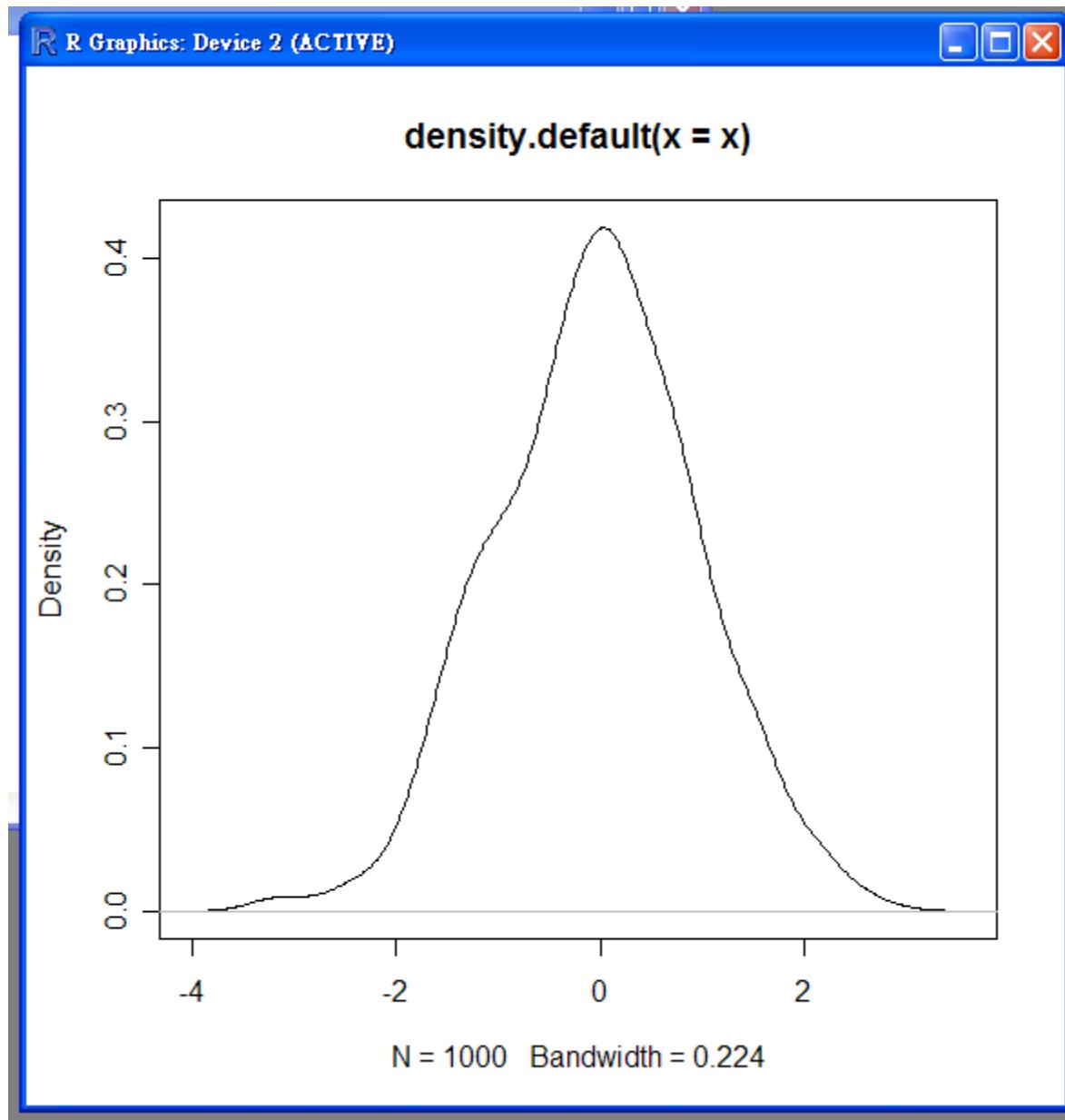
R的物件類別

- Vector
- Matrix (二維)
- Array
- List
- Data Frame
- Function

R當計算機







設定工作目錄

- `getwd()` 檢視目前的工作目錄
- # 先開好資料夾 C:\Rwork
- `> setwd("C://Rwork ")`
- # set new working directory



很多的pdf說明文件
(in English...)

HTML的說明文件
(in English...)

不知道指令的參數
該怎麼下的時候

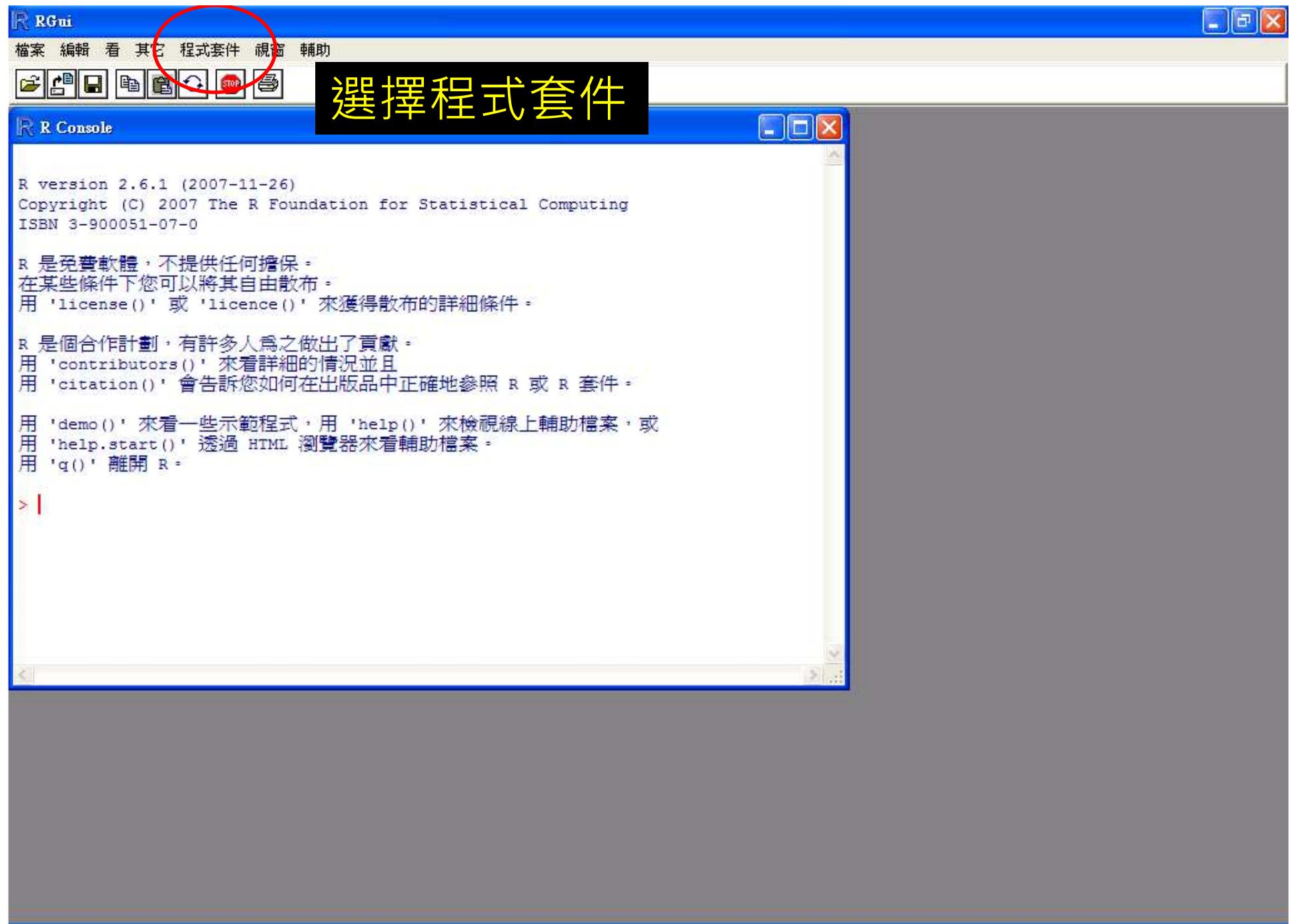
help()

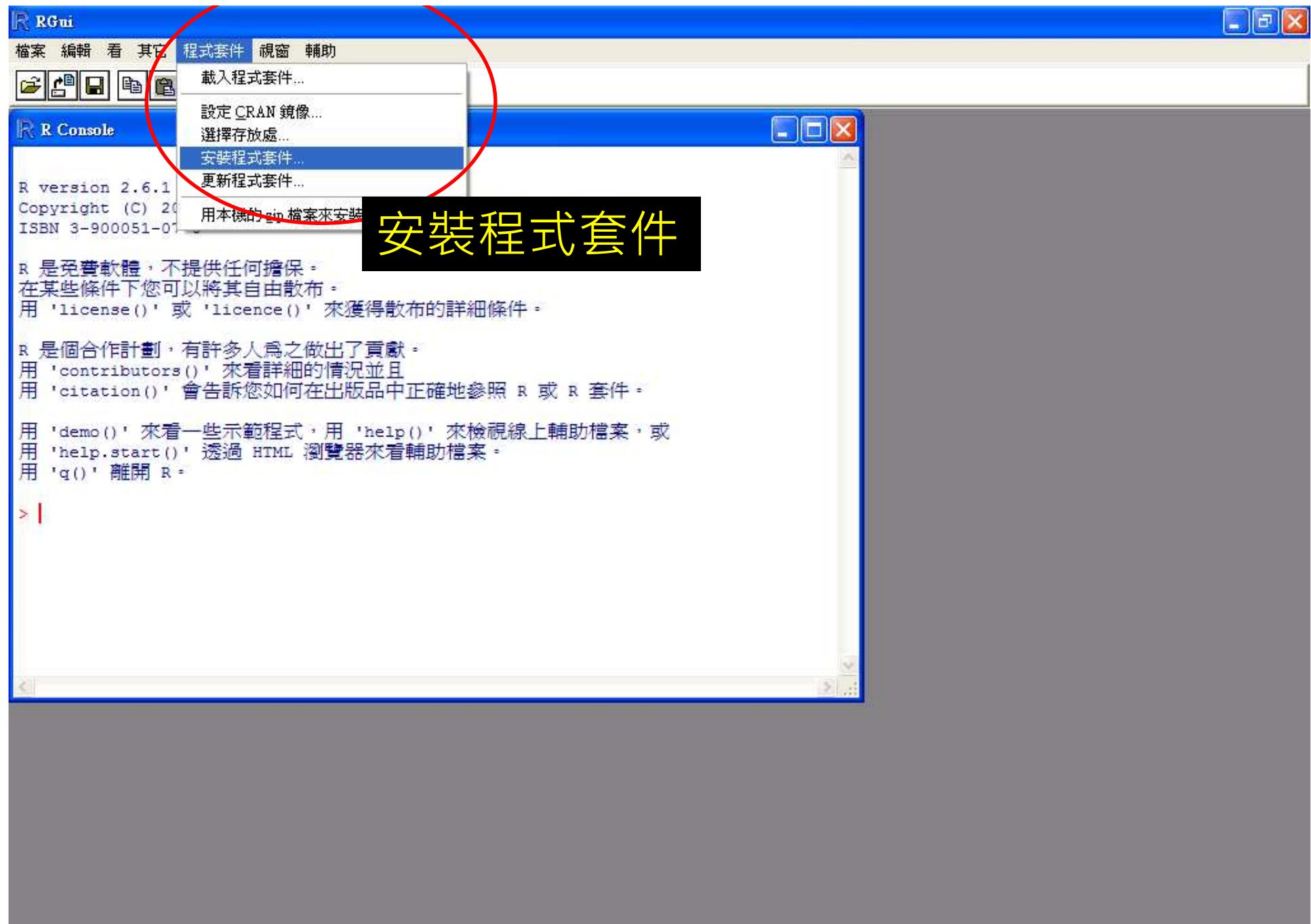
?

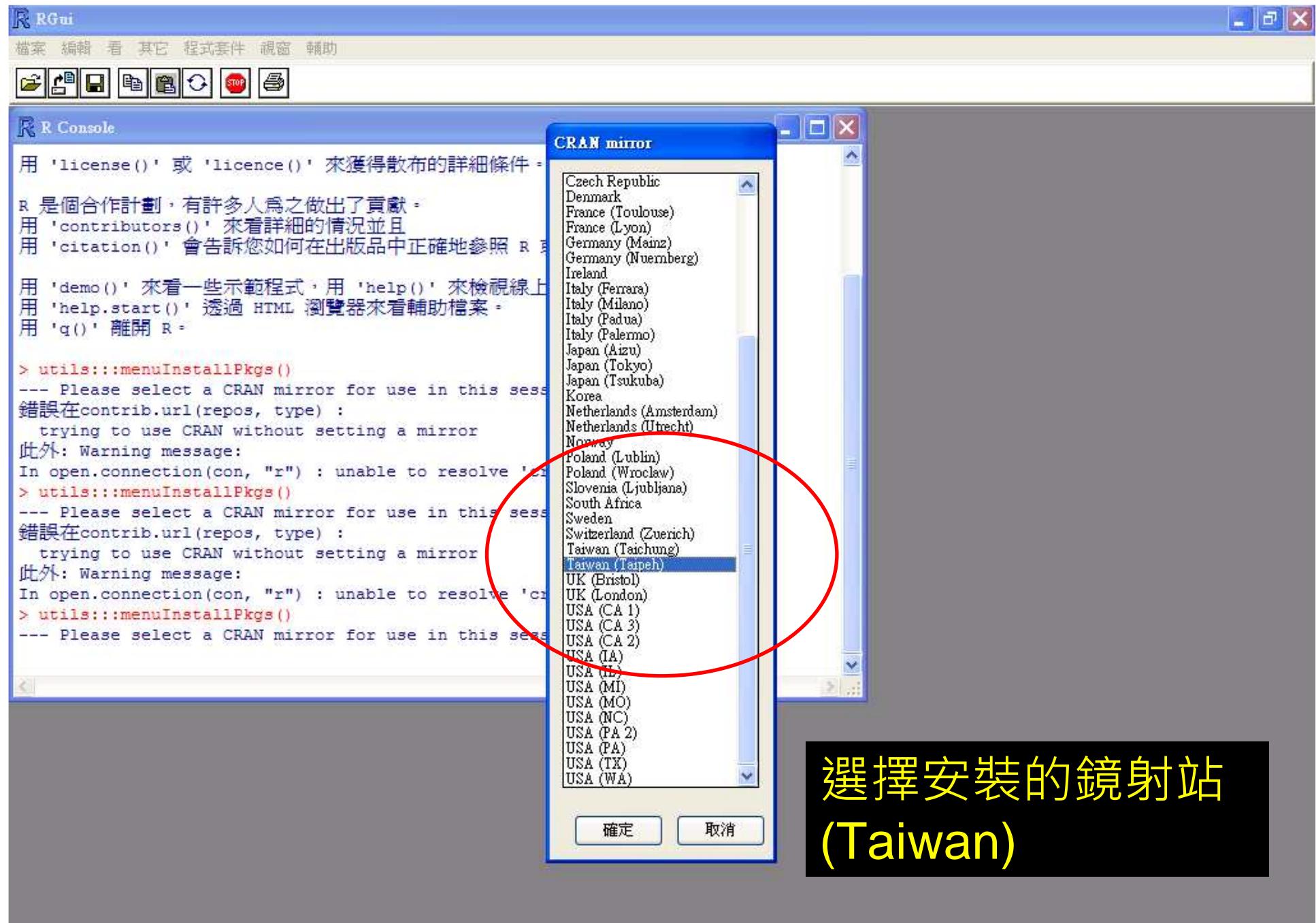


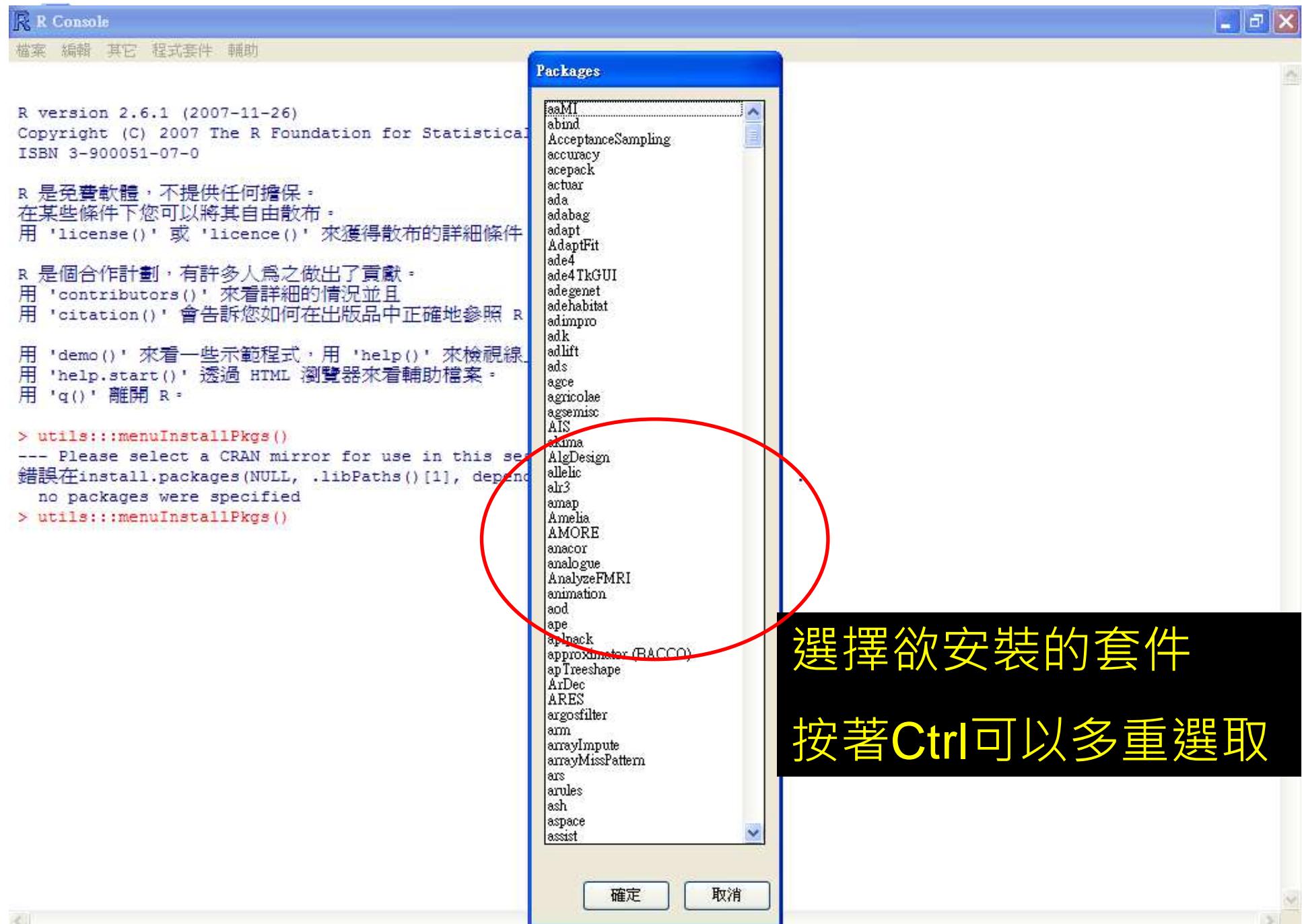
安裝套件package

- `install.packages()`
- 使用GUI選單









選擇欲安裝的套件
按著Ctrl可以多重選取



檔案 編輯 其它 程式套件 輔助



```
R version 2.6.1 (2007-11-26)
Copyright (C) 2007 The R Foundation for Statistical Computing
ISBN 3-900051-07-0
```

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。

```
> utils:::menuInstallPkgs()
--- Please select a CRAN mirror for use in this session ---
錯誤在install.packages(NNUL, .libPaths()[1], dependencies = NA, type = type) :
  no packages were specified
> utils:::menuInstallPkgs()
試開URL 'http://cran.csie.ntu.edu.tw/bin/windows/contrib/2.6/zoo_1.4-2.zip'
Content type 'application/zip' length 932540 bytes (910 Kb)
開啟了 URL
downloaded 910 Kb

package 'zoo' successfully unpacked and MD5 sums checked

The downloaded packages are in
  C:\Documents and Settings\person\Local Settings\Temp\RtmpppYizD0\downloaded_packages
updating HTML package descriptions
> |
```

完成套件的安裝

推薦安裝套件

- **Cairo** 輸出圖檔的套件
- **CircStats** 可以畫玫瑰圖的套件
- **circular**
- **DBI** RMySQL需要
- **mapdata** 地圖資料含高解析 world map
- **mapproj** 投影
- **maps** 繪製地圖的套件
- **maptools** Tools for reading and handling spatial objects
- **nlme** non-linear mixed effect
- **RMySQL**跟MySQL溝通的套件
- **RSQLite**跟SQLite溝通的介面
- **Rwave** Time-Frequency analysis of 1-D signals
- **seewave** Time wave analysis and graphical representation
- **sgeostat** 地質統計套件
- **shapefiles** 讀寫Shapefile
- **signal** 訊號處理
- **spgrass6** 讀寫GRASS的檔案
- **timsac** 時間序列分析



載入套件packages

- `library()`
- 使用GUI工具載入套件

繪製地圖

- 需要的package : maps, maptools, mapdata
- library(maps,maptools,mapdata)
data(worldHiresMapEnv) <- 載入高解析地圖資料

```
map("worldHires", xlim=c(118, 123),  
ylim=c(21, 26)) <- 繪製台灣地區地圖
```

```
map("world", xlim=c(118, 123), ylim=c(21, 26))  
<- 低解析度
```

Demo

- `demo()`
- `demo(package
= .packages(all.available = TRUE))`
- `demo(Japanese)`
- `demo(graphics)`
- `demo(image)`
- `demo(plotmath)`

Demo

- `library(tcltk)`
 - `demo(tkcanvas)`
 - `demo(tkdensity)`
- `library(rgl)`
 - `demo(rgl)`
- `library(seewave)`
 - `demo(seewave)`

R的相關網站

- R官方網站：<http://www.r-project.org>
- R繪圖：
 - <http://addictedtor.free.fr/graphiques/>
 - <http://cged.genes.nig.ac.jp/RGM2/index.php?clear=all>
- 中文教學網站：
 - 台北大學林建甫老師
<http://web.ntpu.edu.tw/~cflin/Teach/R/Rproj.htm>
 - 中山大學劉正山老師
<http://www2.nsysu.edu.tw/politics/liu/main/ResearchTools/appliedStatistics.htm>