



國立臺灣大學

National Taiwan University

使用R語言進行資料分析 Using R for Data Analysis

國立臺灣大學共同教育中心

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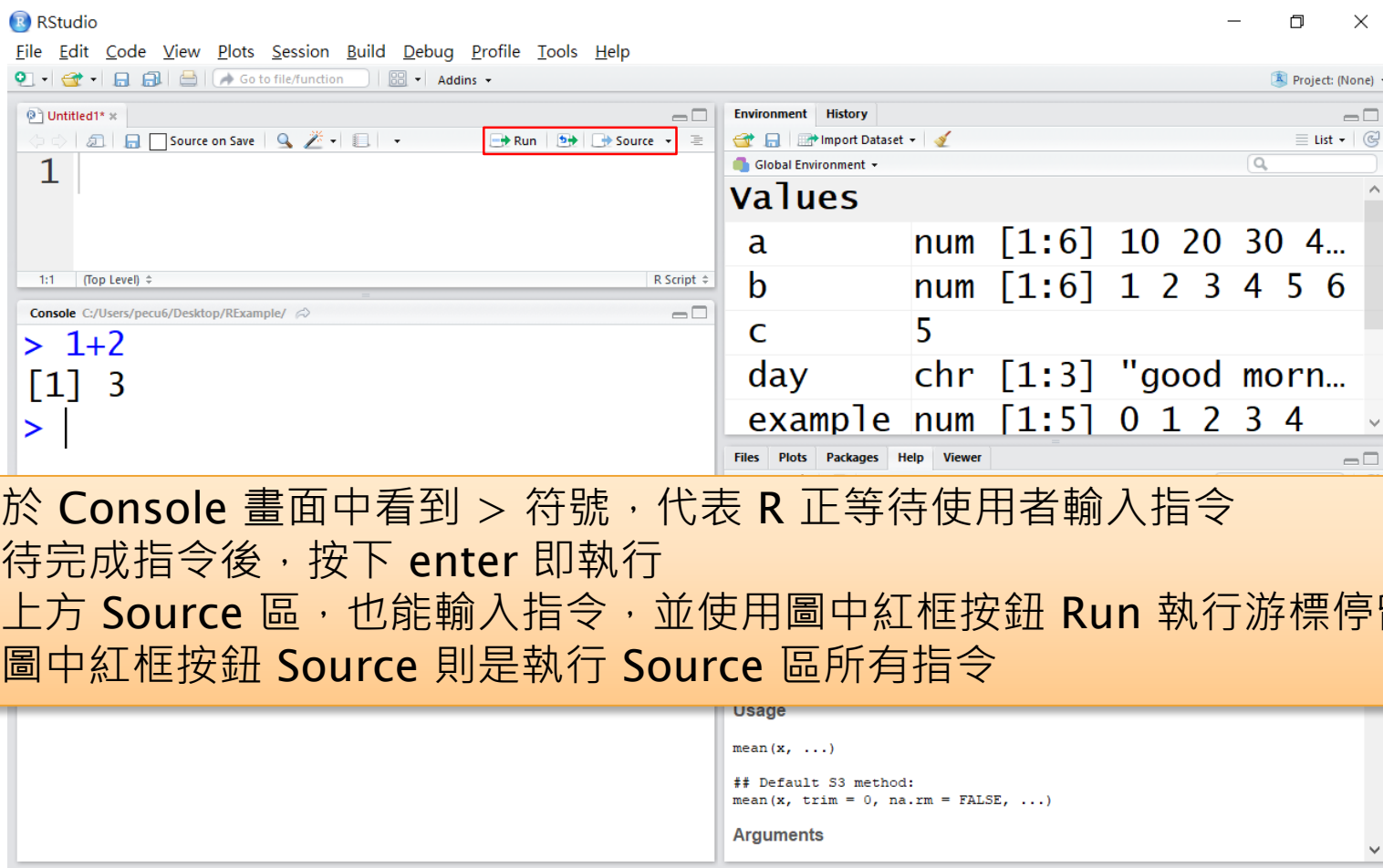
Chapter 02

» R 語言基本語法使用概念

括號的意義

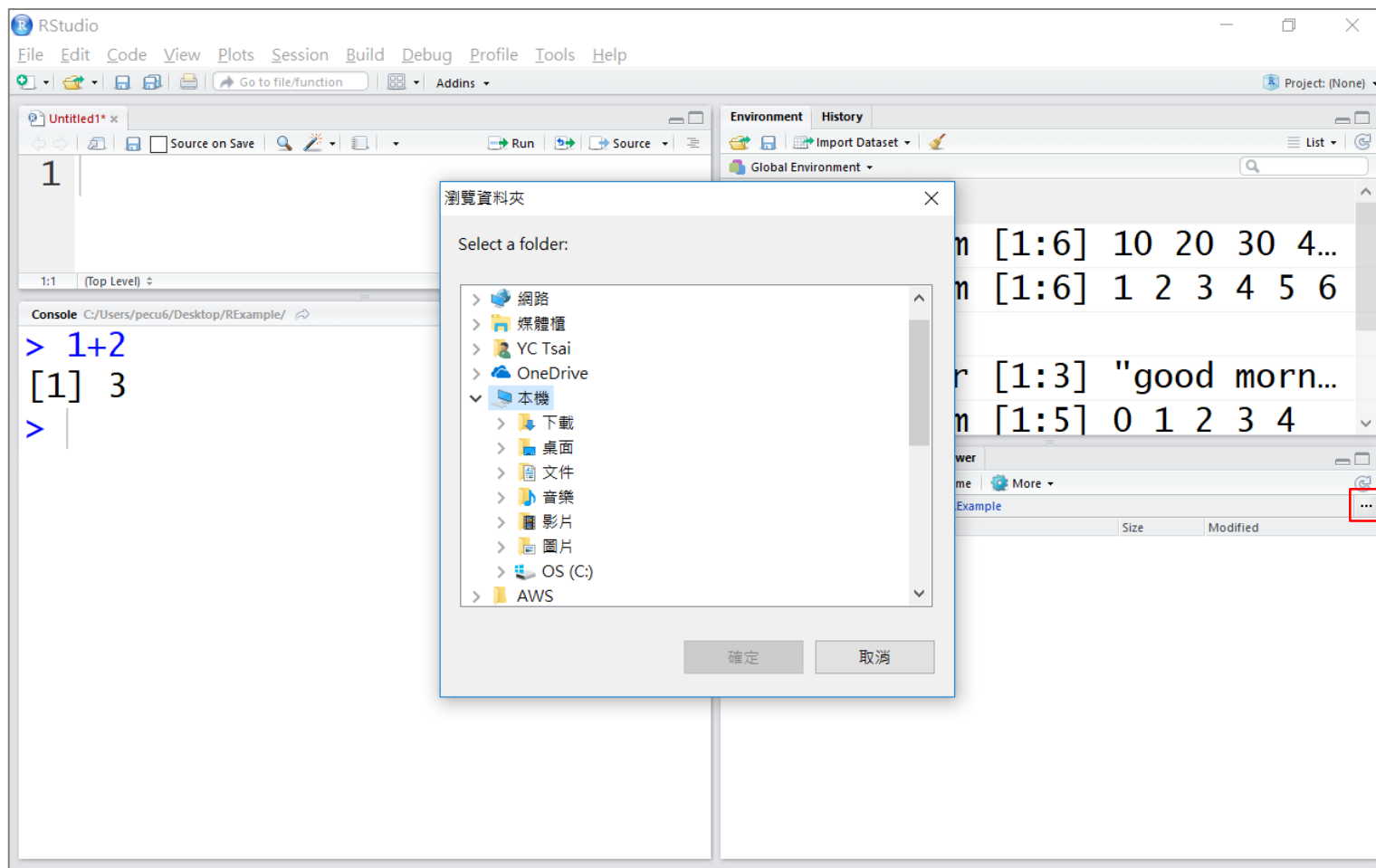
- ▶ 小括號 `()`：用於 **function** 指定輸入的參數
`A = c(10,20,30,40,50)`
`mean(A)`
- ▶ 中括號 `[]`：用於指定特定索引來選取資料內容
承上例，`A[5]`，R 會回傳 50
- ▶ 大括號 `{}`：用於程式段落區塊
`if(a == 5)`
`{`
 ...
`}`

輸入與執行

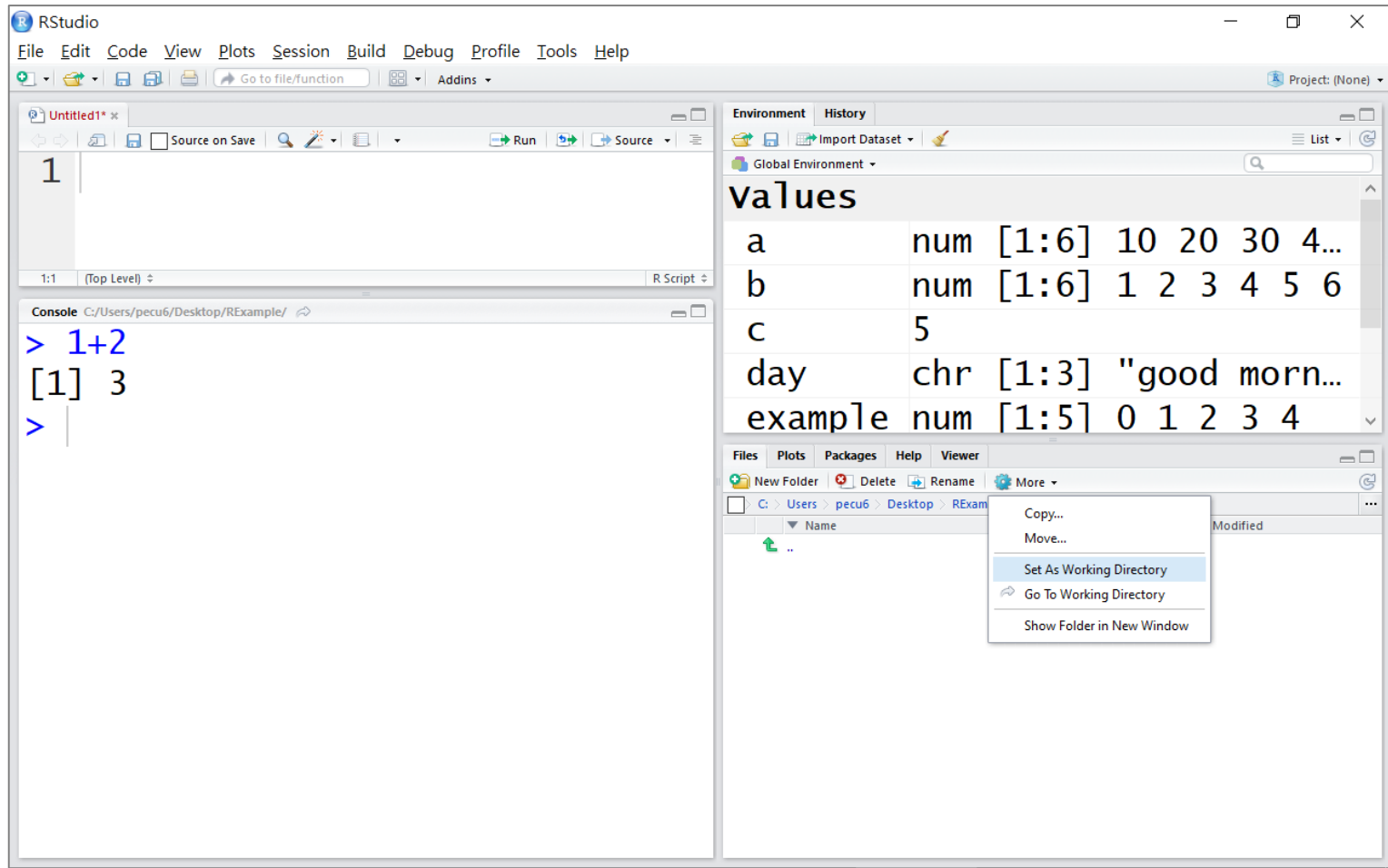


1. 於 Console 畫面中看到 > 符號，代表 R 正等待使用者輸入指令
2. 待完成指令後，按下 enter 即執行
3. 上方 Source 區，也能輸入指令，並使用圖中紅框按鈕 Run 執行游標停留處
4. 圖中紅框按鈕 Source 則是執行 Source 區所有指令

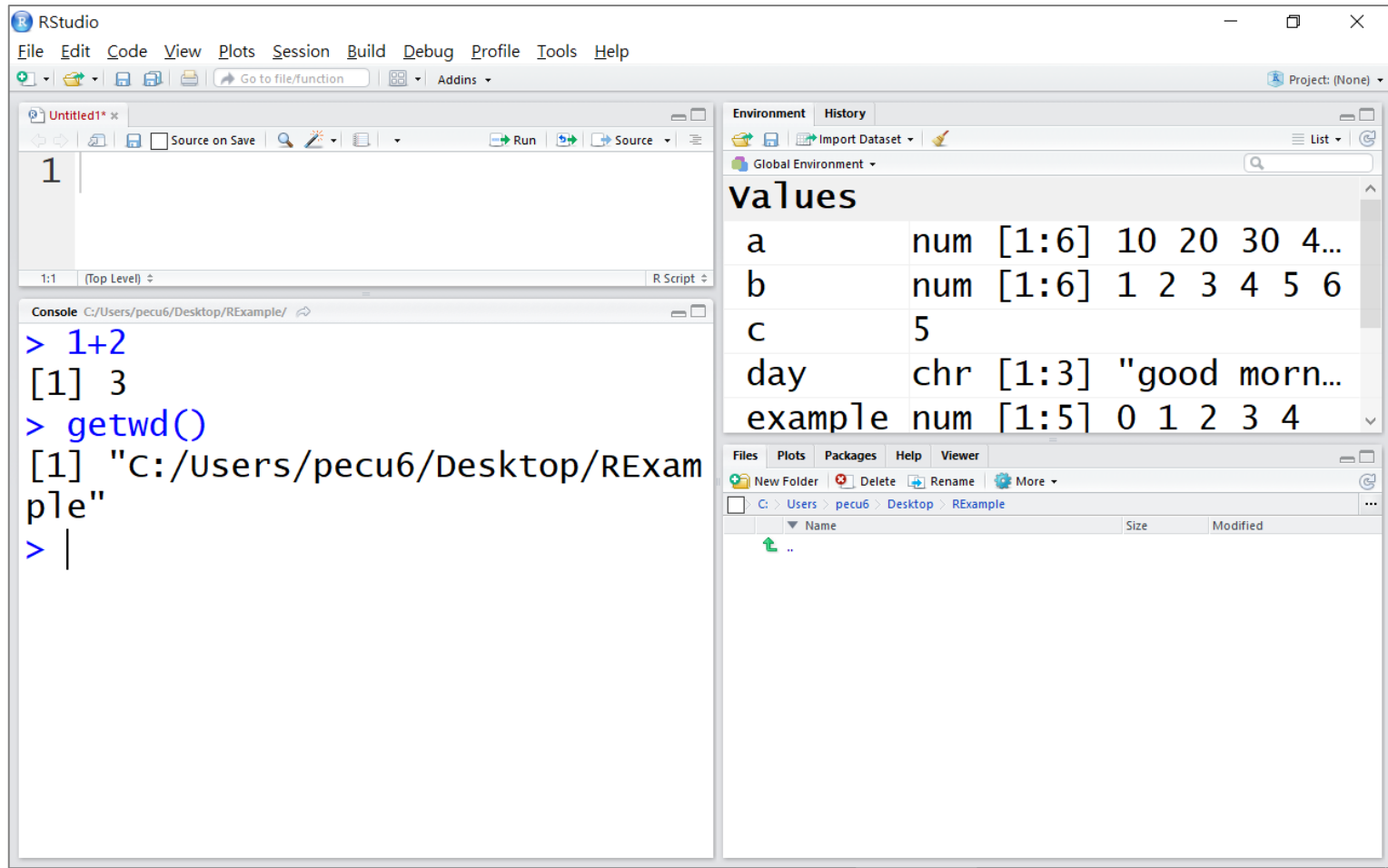
指定工作路徑



指定工作路徑



查詢目前工作路徑



R 提供的預設資料集

R: The R Datasets Packa x

安全 | <https://stat.ethz.ch/R-manual/R-devel/library/datasets/html/00Index.html>

Documentation for package 'datasets' version 3.5.0

- [DESCRIPTION file.](#)

Help Pages

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#)

[datasets-package](#) The R Datasets Package

-- A --

ability.cov	Ability and Intelligence Tests
airmiles	Passenger Miles on Commercial US Airlines, 1937-1960
AirPassengers	Monthly Airline Passenger Numbers 1949-1960
airquality	New York Air Quality Measurements
anscombe	Anscombe's Quartet of 'Identical' Simple Linear Regressions
attenu	The Joyner-Boore Attenuation Data

-- B --

beaver1	Body Temperature Series of Two Beavers
beaver2	Body Temperature Series of Two Beavers
beavers	Body Temperature Series of Two Beavers
BJsales	Sales Data with Leading Indicator
BJsales.lead	Sales Data with Leading Indicator

<https://stat.ethz.ch/R-manual/R-devel/library/datasets/html/00Index.html>

載入 R 預設資料集進行測試

The screenshot shows the RStudio interface. The script editor on the left contains the following code:

```
1 rawData = AirPassengers
2
```

The console on the bottom left shows the execution of the code:

```
> rawData = AirPassengers
> rawData
```

The output of the second command is a time series object:

```
      Jan Feb Mar Apr May Jun
1949 112 118 132 129 121 135
1950 115 126 141 135 125 149
1951 145 150 178 163 172 178
1952 171 180 193 181 183 218
```

The Environment pane on the right shows the variable `rawData` as a Time-Series [1:144]. The Files pane on the bottom right shows the R documentation for the `mean` function.

1. 左邊的單字 **rawData** 為變數名稱，可自行決定
2. 中間的符號 `=` 為運算符號，代表將右邊的資料賦值至左邊的 **rawData** 變數中
3. 賦值除了 `=` 之外，也可以使用 `<-` 來完成
4. 右邊的單字 **AirPassengers** 為 R 預設資料集中的資料

R 的資料型態

- ▶ 向量 (vector)
 - ▶ 類別 (factor)
 - ▶ 索引 (index)
 - ▶ 陣列 (array)
 - ▶ 矩陣 (matrix)
 - ▶ 資料框架 (data.frame)
 - ▶ 列表 (list)
- 

數值向量

The screenshot displays the RStudio interface with the following components:

- Source Editor:** Contains the R script:

```
1
```
- Console:** Shows the execution of the following commands and their output:

```
> example <- c(0,1,2,3,4)
> example
[1] 0 1 2 3 4
> |
```
- Environment:** Displays the variable `example` with values `num [1:5] 0 1 2 3 4`.
- Viewer:** Shows the documentation for the `mean` function, including the title "Arithmetic Mean", a description, usage examples, and arguments.

mean (base) R Documentation

Arithmetic Mean

Description

Generic function for the (trimmed) arithmetic mean.

Usage

```
mean(x, ...)
```

Default S3 method:

```
mean(x, trim = 0, na.rm = FALSE, ...)
```

Arguments

字符串向量

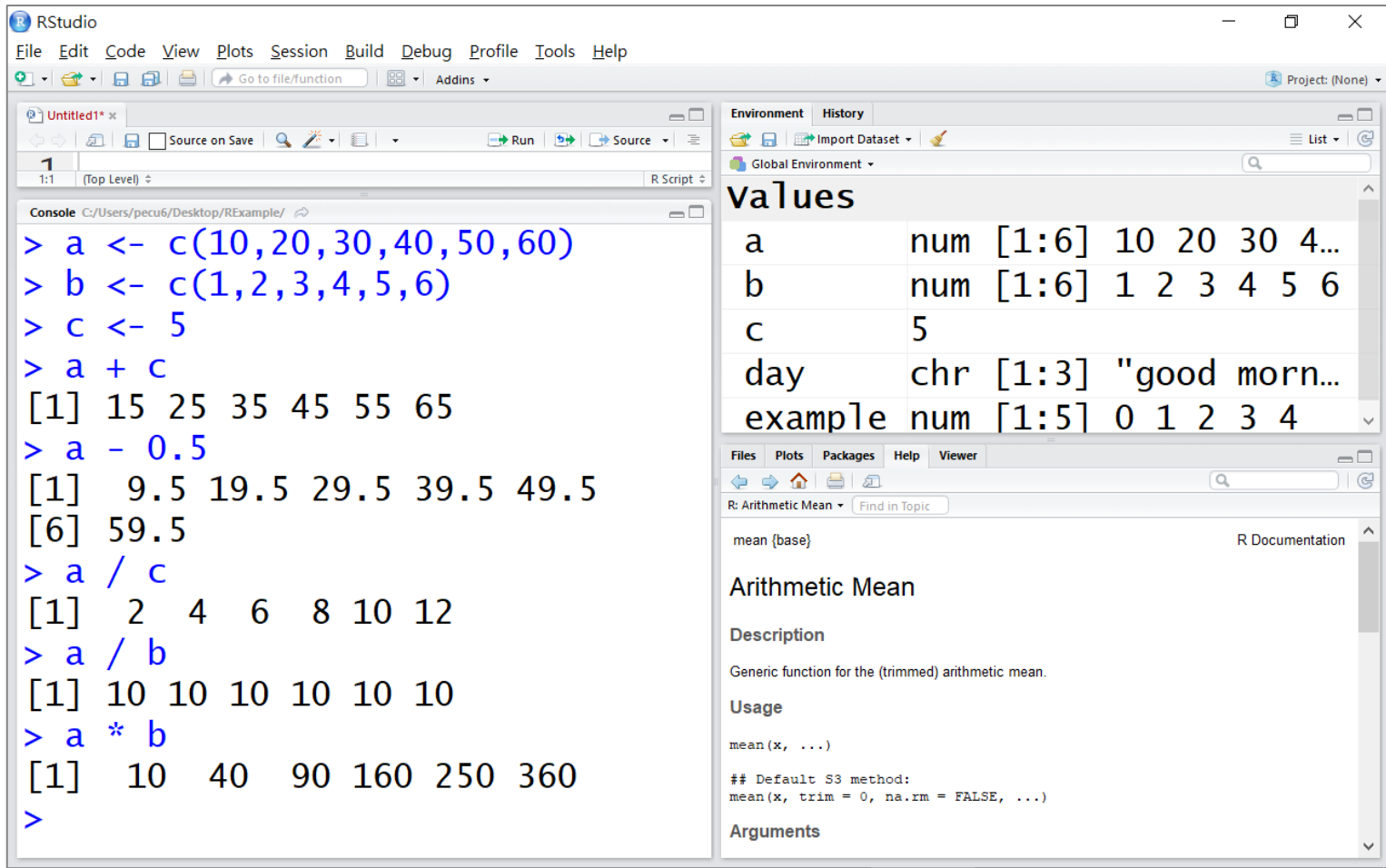
The screenshot displays the RStudio interface with the following components:

- Source Editor:** Contains a single line of code: `1`.
- Console:** Shows the execution of the following R commands and their output:

```
> day <- c("good morning", "good afternoon", "good night")
> day
[1] "good morning"
[2] "good afternoon"
[3] "good night"
>
```
- Environment Pane:** Displays the current environment with the following values:

Variable	Class	Length	Value
day	chr	[1:3]	"good morn..."
example	num	[1:5]	0 1 2 3 4
- Viewer Pane:** Displays the documentation for the `mean` function, including the title "Arithmetic Mean", a description, usage instructions, and arguments.

向量的運算



The screenshot displays the RStudio interface with the following components:

- Console:** Shows the execution of R code for vector operations.

```
> a <- c(10,20,30,40,50,60)
> b <- c(1,2,3,4,5,6)
> c <- 5
> a + c
[1] 15 25 35 45 55 65
> a - 0.5
[1] 9.5 19.5 29.5 39.5 49.5
[6] 59.5
> a / c
[1] 2 4 6 8 10 12
> a / b
[1] 10 10 10 10 10 10
> a * b
[1] 10 40 90 160 250 360
>
```
- Environment Pane:** Displays the current state of the workspace.

name	class	attributes	value
a	num	[1:6]	10 20 30 4...
b	num	[1:6]	1 2 3 4 5 6
c			5
day	chr	[1:3]	"good morn...
example	num	[1:5]	0 1 2 3 4
- Viewer Pane:** Shows the documentation for the `mean` function.

Arithmetic Mean

Description

Generic function for the (trimmed) arithmetic mean.

Usage

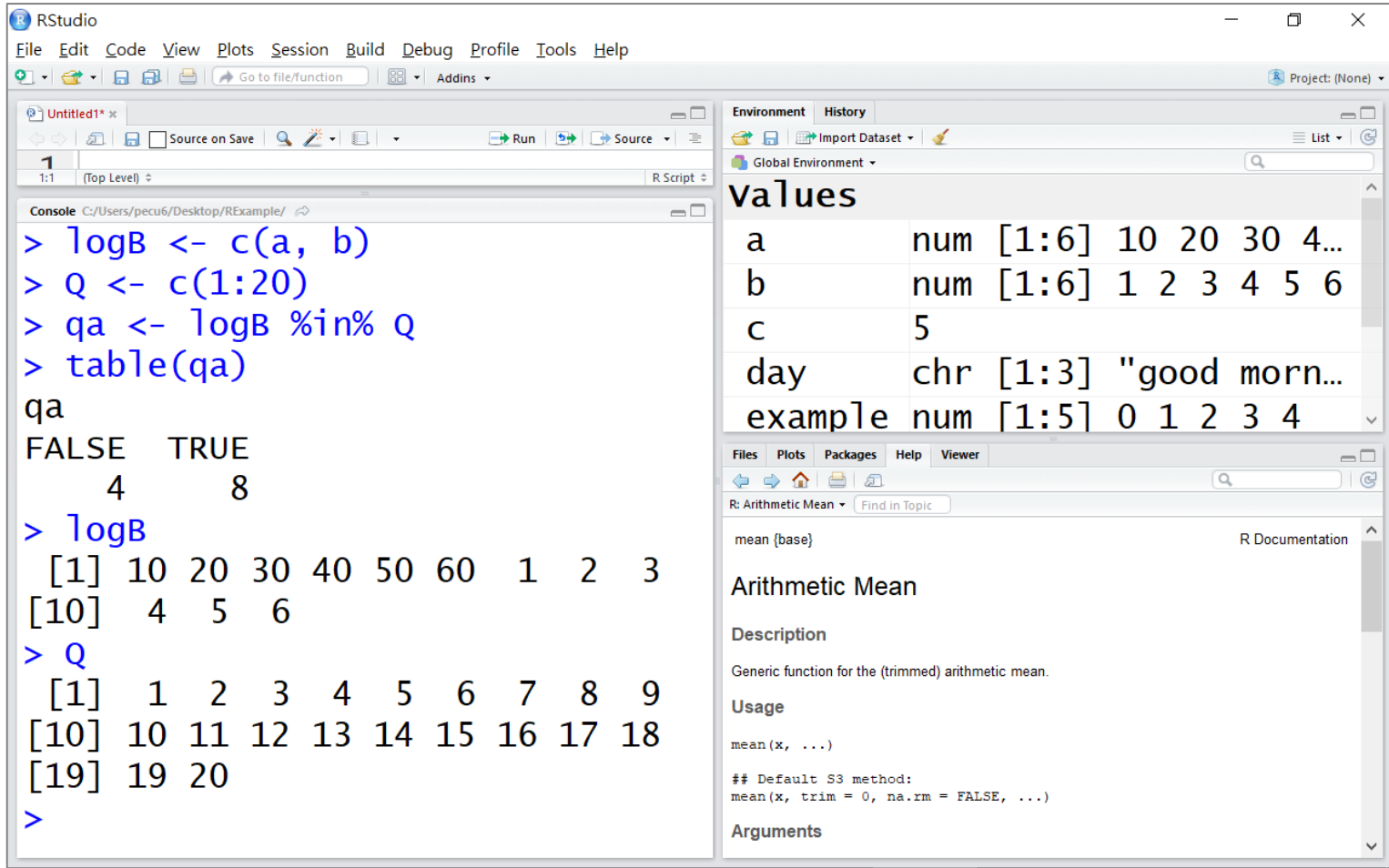
```
mean(x, ...)
```

Default S3 method:

```
mean(x, trim = 0, na.rm = FALSE, ...)
```

Arguments

向量的邏輯



The screenshot displays the RStudio interface with the following components:

- Console:** Shows the execution of R code and the resulting output.

```
> logB <- c(a, b)
> Q <- c(1:20)
> qa <- logB %in% Q
> table(qa)
qa
FALSE TRUE
      4      8
> logB
[1] 10 20 30 40 50 60  1  2  3
[10]  4  5  6
> Q
[1]  1  2  3  4  5  6  7  8  9
[10] 10 11 12 13 14 15 16 17 18
[19] 19 20
>
```
- Environment:** Displays a table of variables in the Global Environment.

values	
a	num [1:6] 10 20 30 4...
b	num [1:6] 1 2 3 4 5 6
c	5
day	chr [1:3] "good morn...
example	num [1:5] 0 1 2 3 4
- Viewer:** Shows the documentation for the `mean` function, including the title "Arithmetic Mean", a description, usage instructions, and arguments.

類別

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains a single line of code: `1`.
- Console:** Displays the execution of R commands:

```
> raw = chile
> class(chile)
[1] "data.frame"
> class(chile$sex)
[1] "factor"
> table(chile$sex)

      F      M 
1379 1321 
> |
```
- Environment:** Shows the Global Environment with a search bar and a list of objects. The 'Data' tab is active, displaying:
 - raw:** 2700 obs. of 8 variables
 - values:**

a	num	[1:6]	10	20	30	4...	
b	num	[1:6]	1	2	3	4	5 6
c			5				
- Files:** Shows the file explorer with the path `C:\Users\pecu6\Desktop\RExample`.

類別交叉分析

The screenshot shows the RStudio interface with the following components:

- Environment Pane:** Shows the 'raw' data frame with 2700 observations and 8 variables.
- Console:** Displays the execution of the following R code:

```
> with(raw, table(education, sex))
```

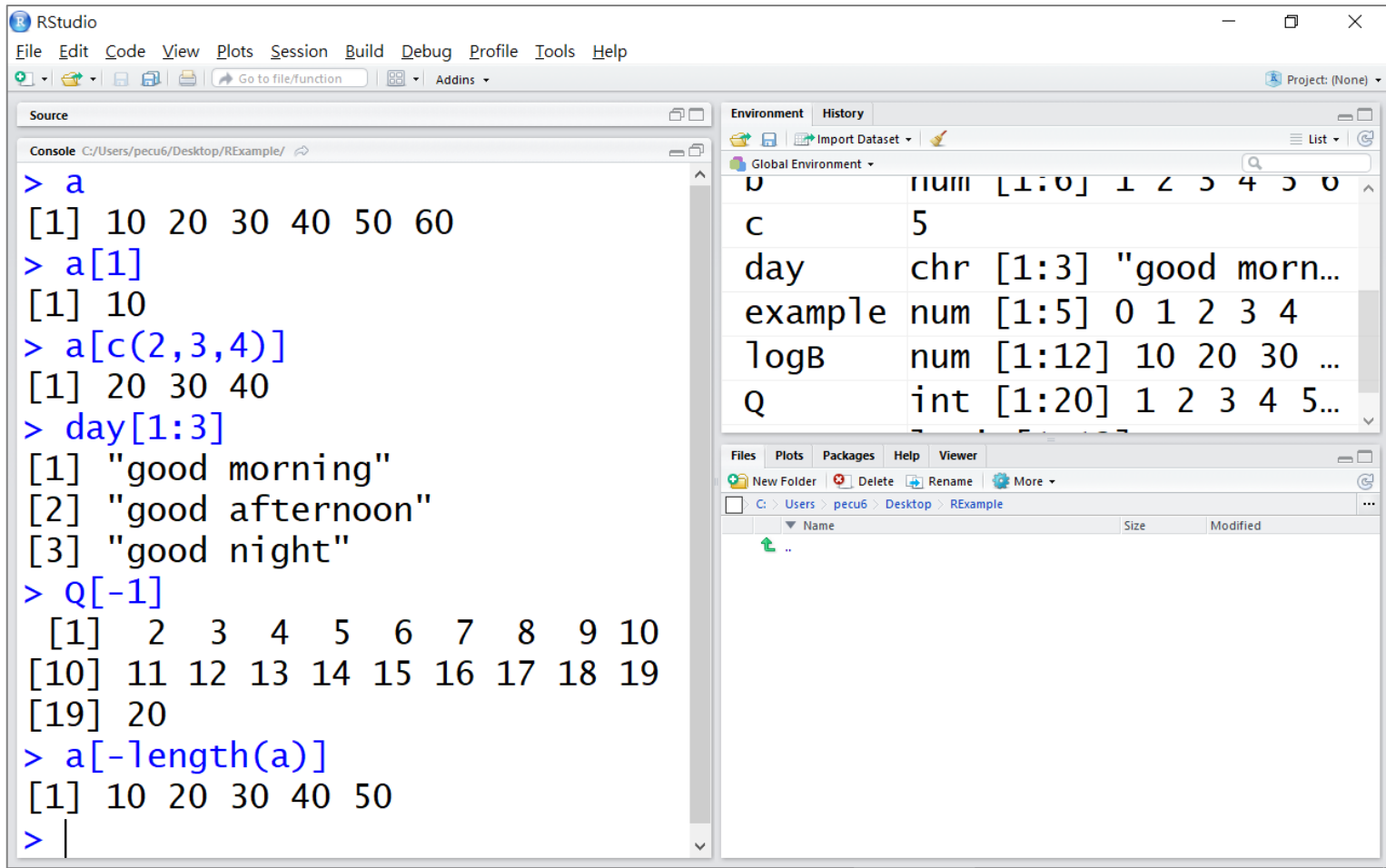
The output is a contingency table for the 'sex' variable, broken down by 'education' levels (P, PS, S).

	sex	
education	F	M
P	607	500
PS	199	263
S	566	554
- Viewer Pane:** Shows the file explorer for the project directory 'C:\Users\pecu6\Desktop\RExample'.

類別

- ▶ 類別資料無法進行四則運算。
- ▶ 類別資料直接使用 **table()** 進行交叉分析非常容易。

索引



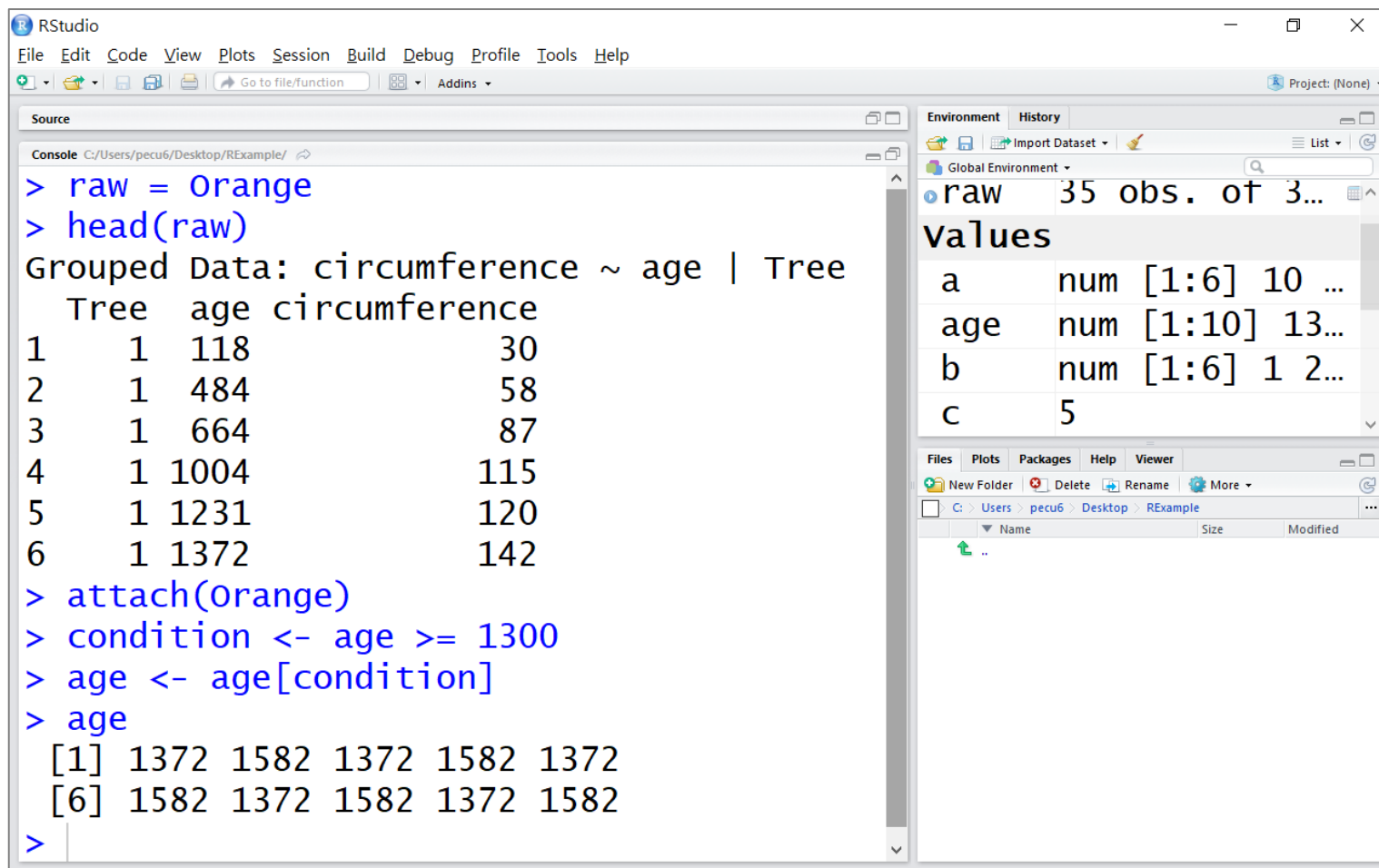
The screenshot shows the RStudio interface with the following components:

- Source:** Empty editor window.
- Console:** Contains the following R commands and their outputs:

```
> a
[1] 10 20 30 40 50 60
> a[1]
[1] 10
> a[c(2,3,4)]
[1] 20 30 40
> day[1:3]
[1] "good morning"
[2] "good afternoon"
[3] "good night"
> Q[-1]
[1] 2 3 4 5 6 7 8 9 10
[10] 11 12 13 14 15 16 17 18 19
[19] 20
> a[-length(a)]
[1] 10 20 30 40 50
> |
```
- Environment:** Shows the Global Environment with the following objects:

Object	Class	Value
a	num	[1:6] 1 2 3 4 5 6
c		5
day	chr	[1:3] "good morn..."
example	num	[1:5] 0 1 2 3 4
logB	num	[1:12] 10 20 30 ...
Q	int	[1:20] 1 2 3 4 5...
- Files:** Shows the file explorer with the path C:\Users\pecu6\Desktop\RExample.

索引與判斷式



The screenshot shows the RStudio interface with the following components:

- Source Panel:** Contains the R script being executed.
- Console Panel:** Shows the output of the R commands.
- Environment Panel:** Displays the current environment with variables and their values.
- Files Panel:** Shows the file explorer for the current project.

Console Output:

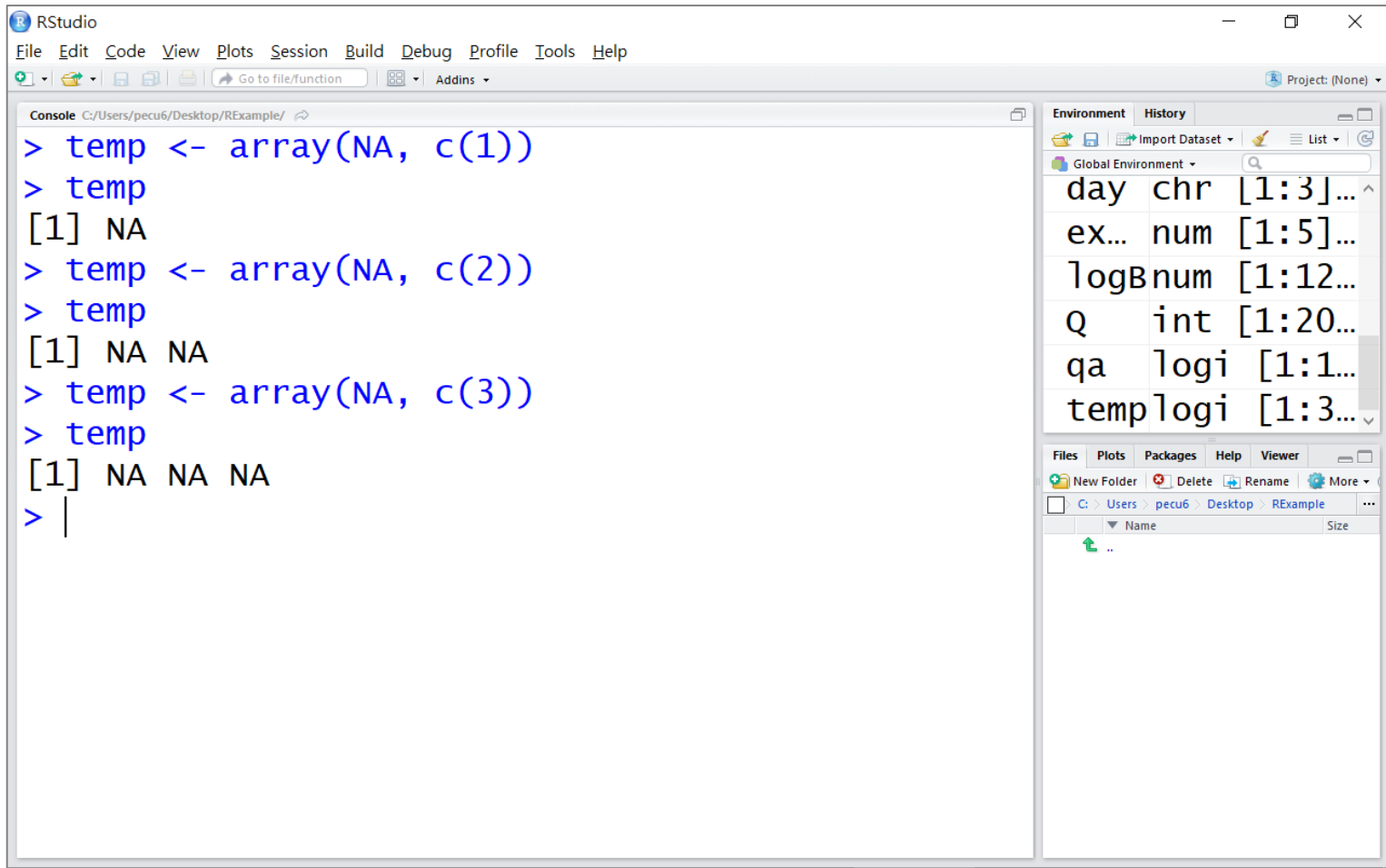
```
> raw = Orange
> head(raw)
Grouped Data: circumference ~ age | Tree
  Tree age circumference
1    1  118             30
2    1  484             58
3    1  664             87
4    1 1004            115
5    1 1231            120
6    1 1372            142
> attach(Orange)
> condition <- age >= 1300
> age <- age[condition]
> age
[1] 1372 1582 1372 1582 1372
[6] 1582 1372 1582 1372 1582
>
```

Environment Panel:

Variable	Type	Value
raw	data.frame	35 obs. of 3...
a	num	[1:6] 10 ...
age	num	[1:10] 13...
b	num	[1:6] 1 2...
c	5	

Files Panel: Shows the file explorer for the current project, with a tree view of the directory structure.

陣列



The screenshot shows the RStudio interface. The console on the left displays the following R code and its output:

```
> temp <- array(NA, c(1))
> temp
[1] NA
> temp <- array(NA, c(2))
> temp
[1] NA NA
> temp <- array(NA, c(3))
> temp
[1] NA NA NA
> |
```

The environment pane on the right shows the Global Environment with the following objects:

Object	Class	Attributes
day	chr	[1:3]...
ex...	num	[1:5]...
logBnum		[1:12]...
Q	int	[1:20]...
qa	logi	[1:1]...
temp	logi	[1:3]...

The Files pane at the bottom shows the current directory structure: C:\Users\pecu6\Desktop\RExample.

矩陣

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains R code to load the 'Duncan' dataset and create a new data object 'newData' by combining 'income' and 'education' columns from 'raw'.
- Console:** Shows the command `> head(raw)` and its output, which displays the first six rows of the 'raw' dataset with columns: type, income, education, and prestige.
- Environment Panel:** Shows the 'Global Environment' with a list of objects: 'raw' (45 obs.), 'a' (num [1:6]...), 'age' (num [1:10]...), and 'b' (num [1:6]...).
- Files Panel:** Shows the file explorer with the path `C:\Users\pecu6\Desktop\RExample`.

Source Editor Code:

```
1 raw <- Duncan
2 newData <- cbind(raw$income, raw$education)
3 |
```

Console Output:

```
> head(raw)
      type income education
accountant prof      62      86
pilot      prof      72      76
architect  prof      75      92
author     prof      55      90
chemist    prof      64      86
minister   prof      21      84
      prestige
accountant    82
pilot         83
architect     90
author        76
```

Environment Panel:

Global Environment

- raw 45 obs. ...
- a num [1:6]...
- age num [1:10]...
- b num [1:6]...

Files Panel:

C:\Users\pecu6\Desktop\RExample

Name	Size
..	

矩陣

The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains two lines of R code:

```
1 raw <- Duncan
2 newData <- cbind(raw$income, raw$education)
```
- Console:** Shows the execution of the code and the resulting matrix:

```
> newData <- cbind(raw$income, raw$education)
> class(newData)
[1] "matrix"
> newData
      [,1] [,2]
[1,]   62   86
[2,]   72   76
[3,]   75   92
[4,]   55   90
[5,]   64   86
[6,]   21   84
[7,]   64   93
[8,]   80  100
```
- Environment/History:** Shows the 'Data' environment with variables 'ne...' (integer [1:4...]) and 'raw' (45 observations).
- Files:** Shows the project directory structure: 'C:\Users\pecu6\Desktop\RExample'.

矩陣運算

The screenshot shows the RStudio interface with the following components:

- Console:** Displays the execution of R code to create and multiply matrices.
- Environment:** Shows the global environment with variables 'a', 'b', and 'new'.
- History:** Lists the commands entered in the console.
- Data:** Provides a summary of the data objects in the environment.
- Values:** Shows the values of the objects in the environment.
- Files, Plots, Packages, Help, Viewer:** Standard RStudio tabs for file management, plotting, package management, help, and viewing plots.

Console Output:

```
> a <- matrix(c(1,0,0), nrow = 3)
> a
      [,1]
[1,]    1
[2,]    0
[3,]    0
> b <- matrix(c(0,0,1), nrow = 1)
> b
      [,1] [,2] [,3]
[1,]    0    0    1
> a %*% b
      [,1] [,2] [,3]
[1,]    0    0    1
[2,]    0    0    0
[3,]    0    0    0
>
```

Environment:

Variable	Class	Attributes
a	num	[1:3...]
b	num	[1, ...]
new	int	[1:4...]

History:

```
1: a <- matrix(c(1,0,0), nrow = 3)
2: b <- matrix(c(0,0,1), nrow = 1)
3: a %*% b
```

Data:

Variable	Class	Attributes
a	num	[1:3...]
b	num	[1, ...]
new	int	[1:4...]

Values:

Variable	Value
a	1 0 0
b	0 0 1
new	1 2 3 4

Help:

R: Matrices

A matrix is the special case of a two-dimensional [array](#).

Examples

```
is.matrix(as.matrix(1:10))
!is.matrix(warpcr) # data.frame
warpcr[1:10,]
as.matrix(warpcr[1:10,]) # using
```

Example of setting row and column names

```
mdat <- matrix(c(1,2,3, 11,12,13), 2, 3)
dimnames = list(c("row1", "row2"), c("col1", "col2", "col3"))
mdat
```

[Package base version 3.3.3 [Index](#)]

矩陣運算

The screenshot shows the RStudio interface with the following components:

- Console:** Displays the execution of R code and the resulting matrix `A`.
- Environment:** Lists the objects in the global environment: `A` (numeric vector), `a` (numeric vector), `b` (numeric vector), `new` (integer vector), and `raw` (raw vector).
- Viewer:** Shows the help page for the `matrix` function, including a description and examples.

Console Output:

```
> t(b) %*% t(a)
      [,1] [,2] [,3]
[1,]      0      0      0
[2,]      0      0      0
[3,]      1      0      0
> a1 <- c(1,2,3,4)
> a2 <- c(2,3,4,5)
> a3 <- c(3,4,5,6)
> a4 <- c(4,5,6,7)
> A <- cbind(a1,a2,a3,a4)
> A
      a1 a2 a3 a4
[1,]  1  2  3  4
[2,]  2  3  4  5
[3,]  3  4  5  6
[4,]  4  5  6  7
>
```

Environment:

Object	Class	Length
A	num	[1:4...]
a	num	[1:3...]
b	num	[1, ...]
new	int	[1:4...]
raw	raw	45 obs. ...

Viewer: R: Matrices

A matrix is the special case of a two-dimensional [array](#).

Examples

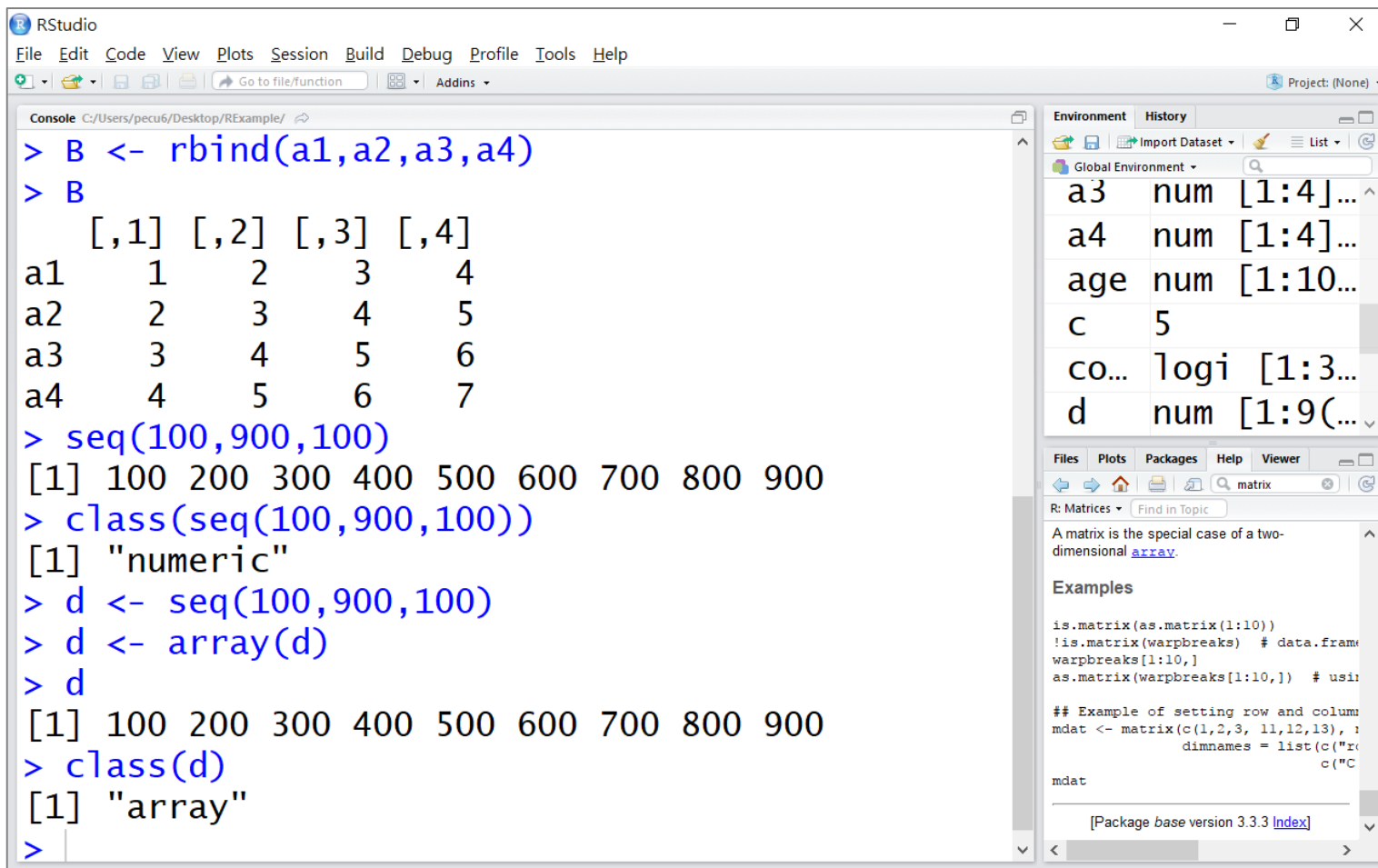
```
is.matrix(as.matrix(1:10))
!is.matrix(warpbreaks) # data.frame
warpbreaks[1:10,]
as.matrix(warpbreaks[1:10,]) # using
```

Example of setting row and column names

```
mdat <- matrix(c(1,2,3, 11,12,13), 2, 3)
dimnames = list(c("R", "C"), c("C", "C"))
mdat
```

[Package base version 3.3.3 [Index](#)]

矩陣運算



The screenshot shows the RStudio interface with the following content:

Console:

```
> B <- rbind(a1,a2,a3,a4)
> B
      [,1] [,2] [,3] [,4]
a1      1    2    3    4
a2      2    3    4    5
a3      3    4    5    6
a4      4    5    6    7
> seq(100,900,100)
[1] 100 200 300 400 500 600 700 800 900
> class(seq(100,900,100))
[1] "numeric"
> d <- seq(100,900,100)
> d <- array(d)
> d
[1] 100 200 300 400 500 600 700 800 900
> class(d)
[1] "array"
>
```

Environment Pane:

Object	Class	Attributes
a3	num	[1:4]...
a4	num	[1:4]...
age	num	[1:10]...
c		5
co...	logi	[1:3]...
d	num	[1:9(...

Help Pane:

R: Matrices

A matrix is the special case of a two-dimensional [array](#).

Examples

```
is.matrix(as.matrix(1:10))
!is.matrix(warpbreaks) # data.frame
warpbreaks[1:10,]
as.matrix(warpbreaks[1:10,]) # using
```

Example of setting row and column names

```
mdat <- matrix(c(1,2,3, 11,12,13), 2, 3)
dimnames = list(c("row1", "row2"), c("col1", "col2", "col3"))
mdat
```

[Package base version 3.3.3 [Index](#)]

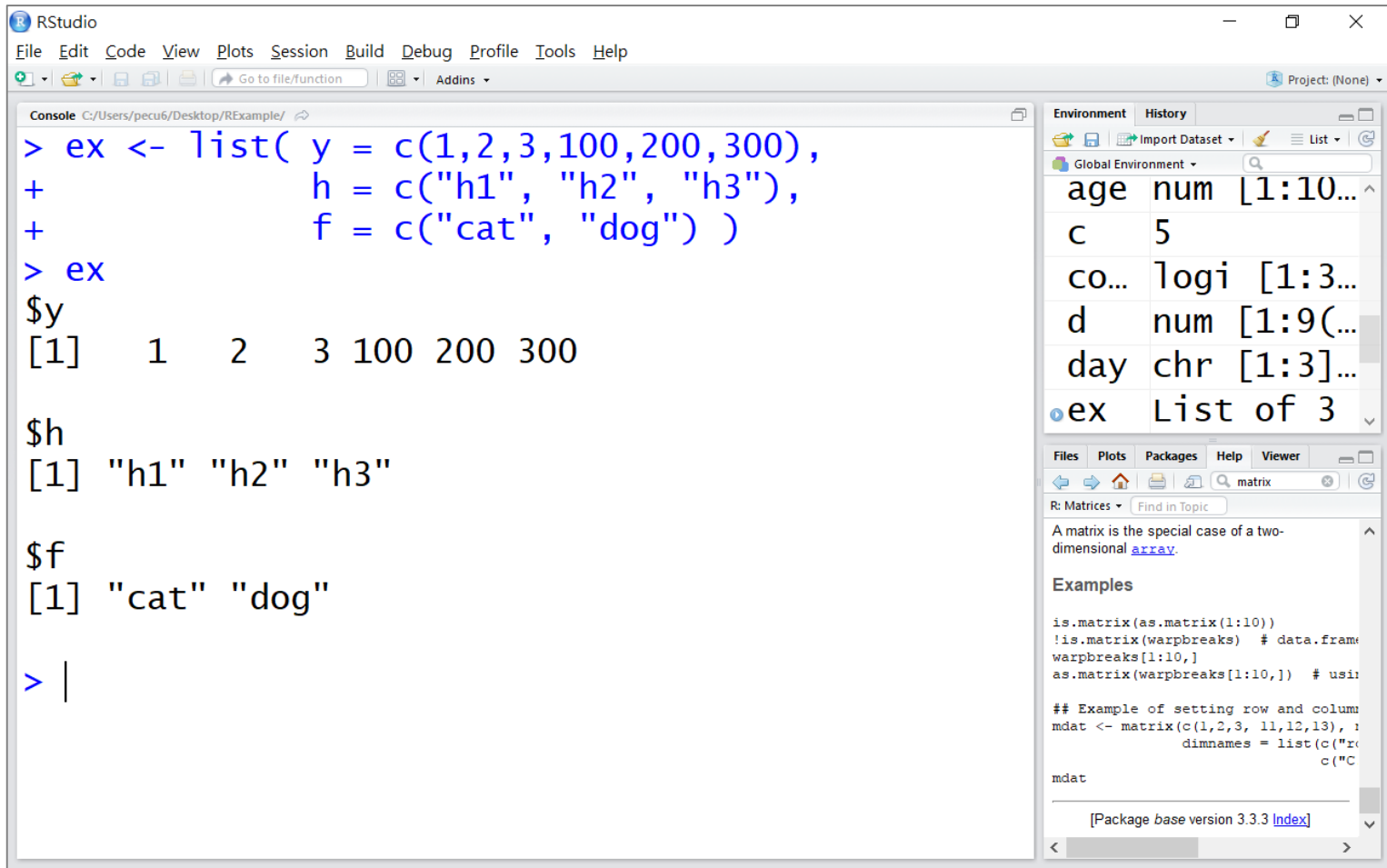
資料框架

The screenshot shows the RStudio interface with the following components:

- Console:** Displays the execution of R code. First, a matrix `A` is created with 4 rows and 4 columns, labeled `a1`, `a2`, `a3`, and `a4`. Then, `class(A)` is called, returning `[1] "matrix"`. Next, `A <- data.frame(A)` is executed to convert the matrix into a data frame. Finally, `class(A)` is called again, returning `[1] "data.frame"`.
- Environment:** Shows the objects in the global environment. It lists `A` as a data frame with 4 observations. Below it, the columns are listed: `a` (numeric, 1:3), `B` (numeric, 1:4), `b` (numeric, 1:), and `ne` (integer, 1:4).
- Viewer:** Displays the documentation for the `matrix` function, explaining that a matrix is a special case of a two-dimensional array and providing examples of its usage.

```
> A
      a1 a2 a3 a4
[1,]  1  2  3  4
[2,]  2  3  4  5
[3,]  3  4  5  6
[4,]  4  5  6  7
> class(A)
[1] "matrix"
> A <- data.frame(A)
> A
      a1 a2 a3 a4
1     1  2  3  4
2     2  3  4  5
3     3  4  5  6
4     4  5  6  7
> class(A)
[1] "data.frame"
>
```

列表



The screenshot shows the RStudio interface. The console on the left displays the creation of a list object 'ex' and its subsequent inspection. The environment pane on the right shows the global environment with the list object 'ex' and its components.

```
> ex <- list( y = c(1,2,3,100,200,300),  
+           h = c("h1", "h2", "h3"),  
+           f = c("cat", "dog") )  
> ex  
$y  
[1] 1 2 3 100 200 300  
  
$h  
[1] "h1" "h2" "h3"  
  
$f  
[1] "cat" "dog"  
> |
```

The environment pane on the right shows the global environment with the following objects:

Object	Class	Attributes
age	num	[1:10]...
c		5
co...	logi	[1:3]...
d	num	[1:9(]...
day	chr	[1:3]...
ex	List	of 3

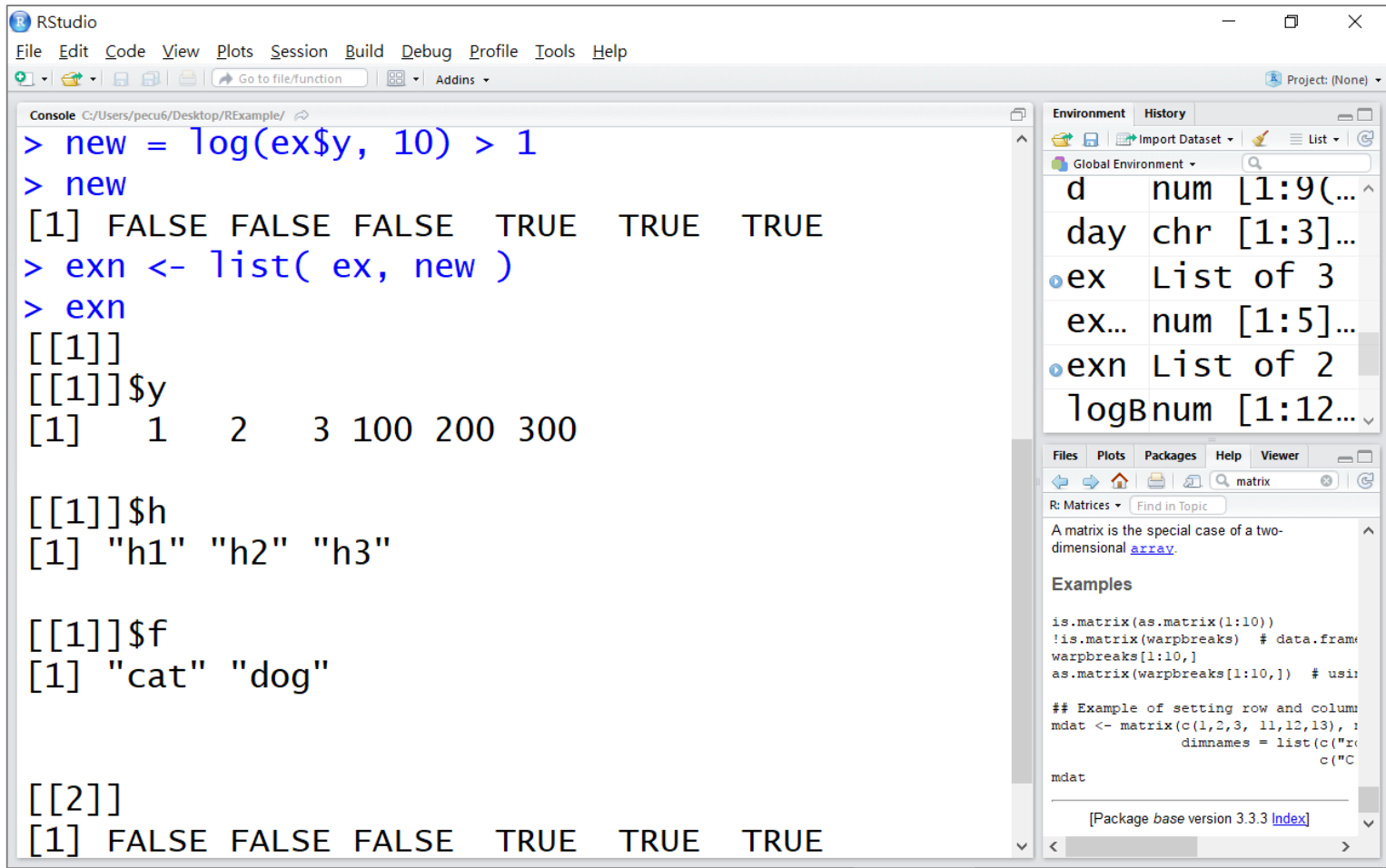
The bottom pane shows the R: Matrices help page, which includes the following text:

A matrix is the special case of a two-dimensional [array](#).

Examples

```
is.matrix(as.matrix(1:10))  
!is.matrix(warpbreaks) # data.frame  
warpbreaks[1:10,]  
as.matrix(warpbreaks[1:10,]) # usi  
  
## Example of setting row and column  
mdat <- matrix(c(1,2,3, 11,12,13), 2, 3)  
dimnames = list(c("R", "C"),  
                c("C", "C"))  
mdat  
  
[Package base version 3.3.3 Index]
```

列表



The screenshot shows the RStudio interface with the following components:

- Console:** Displays the execution of R code and its output.

```
> new = log(ex$y, 10) > 1
> new
[1] FALSE FALSE FALSE TRUE TRUE TRUE
> exn <- list( ex, new )
> exn
[[1]]
[[1]]$y
[1] 1 2 3 100 200 300

[[1]]$h
[1] "h1" "h2" "h3"

[[1]]$f
[1] "cat" "dog"

[[2]]
[1] FALSE FALSE FALSE TRUE TRUE TRUE
```
- Environment:** Lists the objects in the global environment.

Object	Class	Attributes
d	num	[1:9(...]
day	chr	[1:3]...
ex	List of 3	
ex...	num	[1:5]...
exn	List of 2	
logBnum		[1:12...
- Help:** Shows the documentation for the `matrix` function.

R: Matrices

A matrix is the special case of a two-dimensional [array](#).

Examples

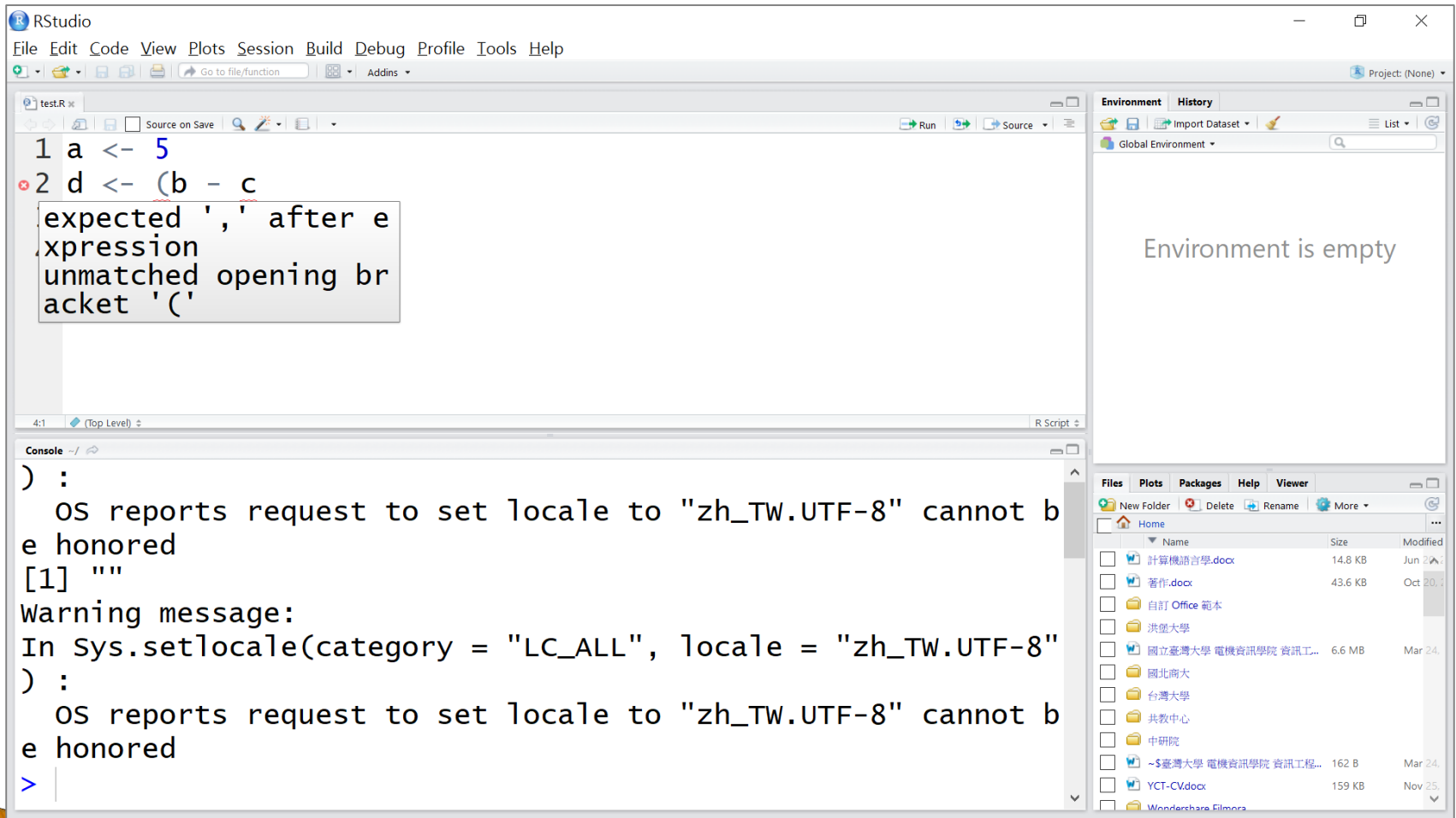
```
is.matrix(as.matrix(1:10))
!is.matrix(warpbreaks) # data.frame
warpbreaks[1:10,]
as.matrix(warpbreaks[1:10,]) # using as.matrix
```

Example of setting row and column names

```
mdat <- matrix(c(1,2,3, 11,12,13), nrow=2, ncol=3)
dimnames = list(c("row1", "row2"), c("col1", "col2", "col3"))
mdat
```

[Package base version 3.3.3 [Index](#)]

善用語法錯誤提示



The screenshot displays the RStudio interface with a syntax error in the script editor and the corresponding console output.

Script Editor:

```
1 a <- 5
2 d <- (b - c
```

A tooltip points to the error on line 2, stating: "expected ',' after expression unmatched opening bracket '('".

Console:

```
) :
OS reports request to set locale to "zh_TW.UTF-8" cannot be honored
[1] ""
Warning message:
In Sys.setlocale(category = "LC_ALL", locale = "zh_TW.UTF-8") :
OS reports request to set locale to "zh_TW.UTF-8" cannot be honored
>
```

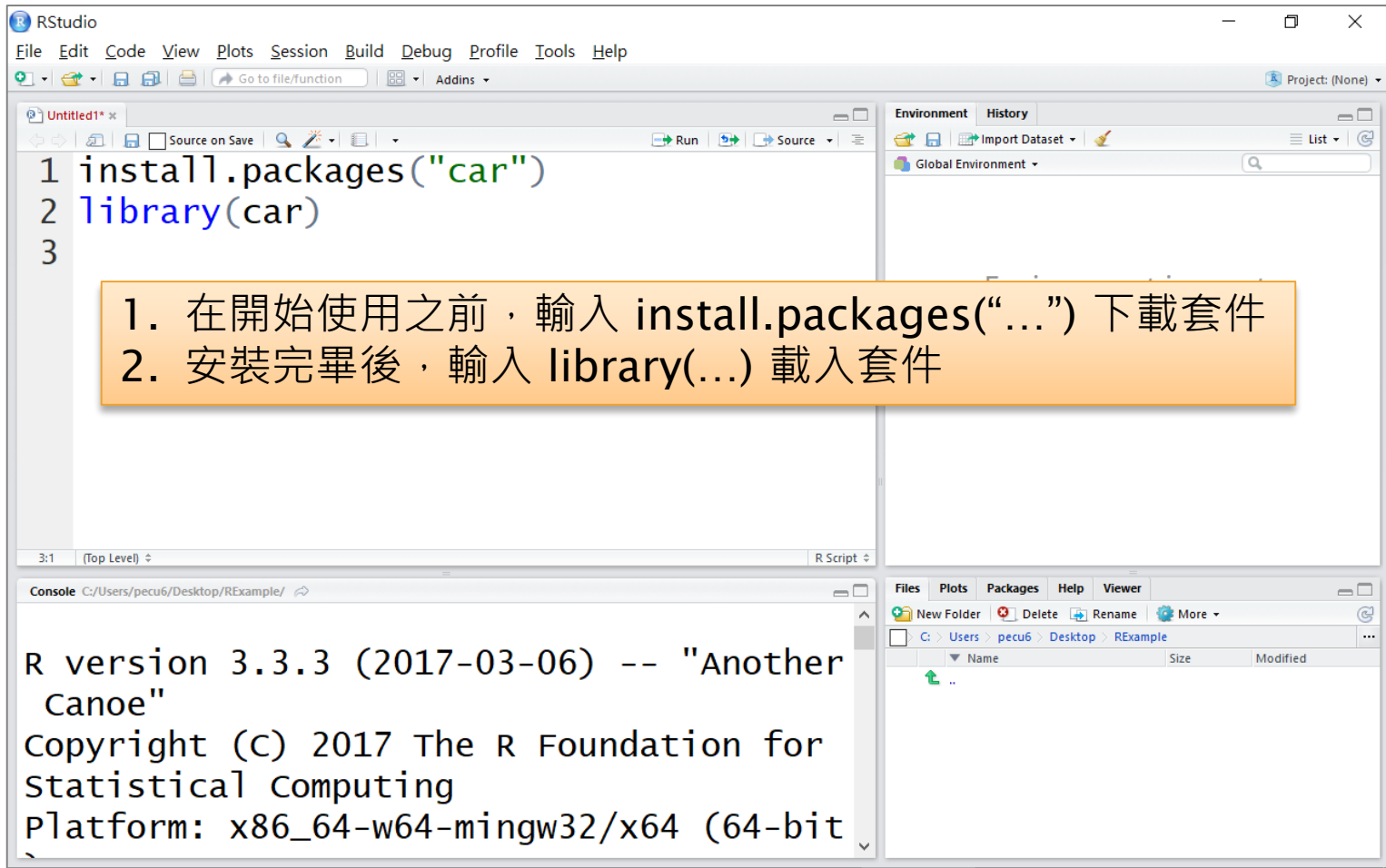
Environment Panel:

Environment is empty

Files Panel:

Name	Size	Modified
計算機語言學.docx	14.8 KB	Jun 24, 2017
著作.docx	43.6 KB	Oct 20, 2017
自訂 Office 範本		
洪堡大學		
國立臺灣大學 電機資訊學院 資訊工...	6.6 MB	Mar 24, 2018
國北商大		
台灣大學		
共教中心		
中研院		
~\$臺灣大學 電機資訊學院 資訊工...	162 B	Mar 24, 2018
YCT-CV.docx	159 KB	Nov 25, 2017
Wondershare Filmora		

使用 R 套件 (packages)



The screenshot shows the RStudio interface with the following components:

- Source Editor:** Contains the following R code:

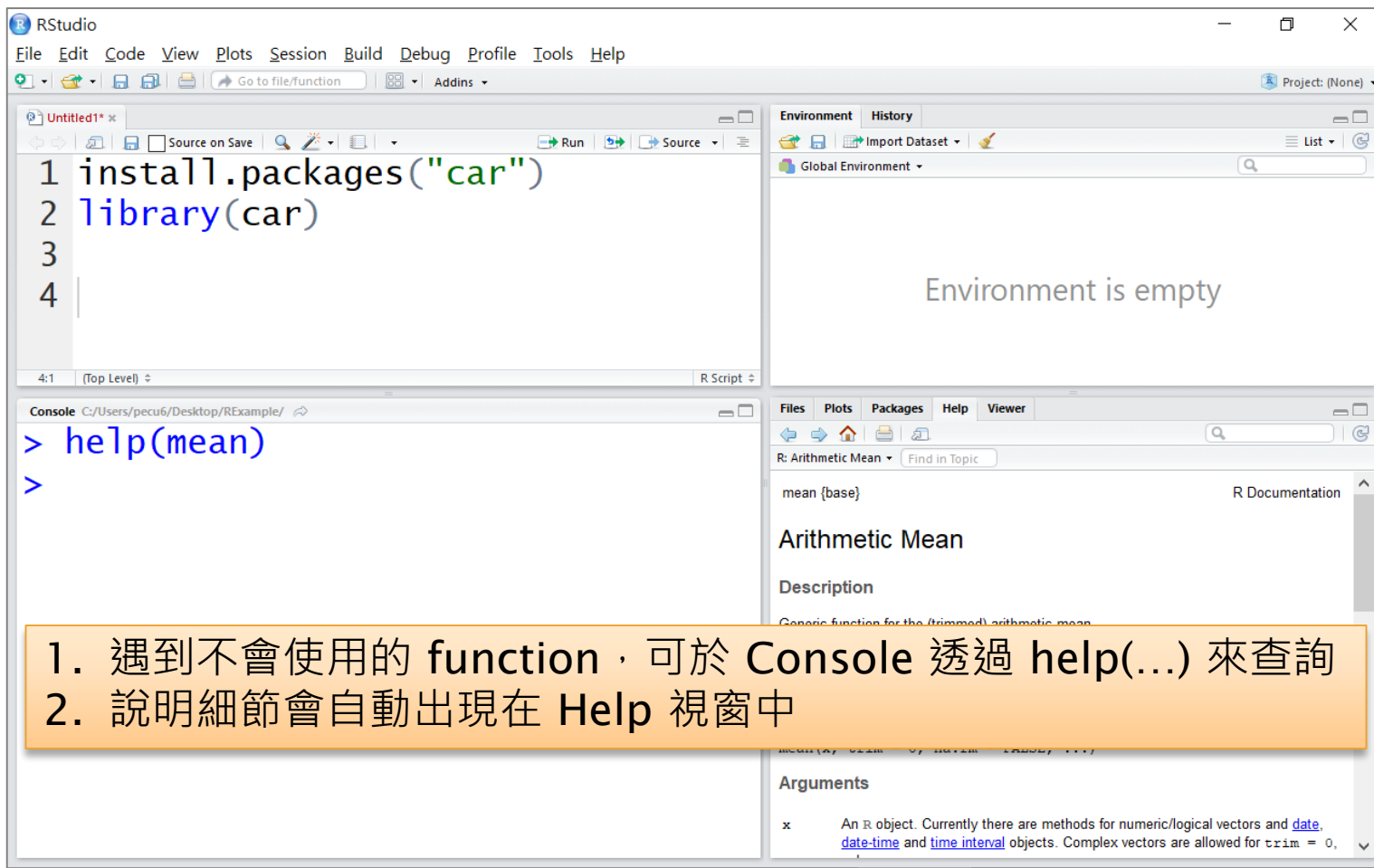
```
1 install.packages("car")
2 library(car)
3
```
- Environment/History Panel:** Shows the "Global Environment" with a search bar and a "List" button.
- Console:** Displays the R version and system information:

```
R version 3.3.3 (2017-03-06) -- "Another Canoe"
Copyright (C) 2017 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)
```
- Files Panel:** Shows the file explorer for the project directory, with a table of files and folders.

An orange callout box is overlaid on the code editor, containing the following instructions:

1. 在開始使用之前，輸入 `install.packages("...")` 下載套件
2. 安裝完畢後，輸入 `library(...)` 載入套件

多請教 R 老師



The screenshot displays the RStudio interface with three main panels:

- Source Editor:** Contains the following R code:

```
1 install.packages("car")
2 library(car)
3
4
```
- Console:** Shows the command `> help(mean)` and a subsequent prompt `>`.
- Help Window:** Displays the documentation for the `mean` function, titled "Arithmetic Mean". It includes a description and arguments section.

Below the screenshot, an orange box contains the following instructions:

1. 遇到不會使用的 function，可於 Console 透過 `help(...)` 來查詢
2. 說明細節會自動出現在 Help 視窗中

R 常用基本指令

R commands(11.09.13)

(Jah Tsai since 2011.01.21 jah_tsai@hotmail.com)

- ▶ **參考來源：**R Help & R 軟體 應用統計方法(修訂版) 陳景祥
統計計算與模擬 余清祥(NCCU Stat.) & 多變量分析 洪英超(NCCU Stat.)
- ▶ **使用時機：**已對 R 指令有基本了解，但對於不常用的指令還未完全熟記，或遇到問題時想知道 R 有哪些指令可用，所以整理此表以供簡單查詢，詳細用法請見參考資料。

指令	用法簡介
▶ 基本操作	
source("路徑")	載入外部程式
sink("路徑")+sink()	紀錄程式執行結果
demo(套件)	展示套件的示範功能
example(函數)	執行範例程式
library(套件)	載入套件
require(套件)	在自訂函數中使用以載入套件
detach(package:套件)	卸載以載入的套件
install.packages(套件)	安裝套件
data(資料檔)	載入資料檔

[http://www3.nccu.edu.tw/~99354011/R%20commands\(11.09.13\).pdf](http://www3.nccu.edu.tw/~99354011/R%20commands(11.09.13).pdf)