Minería de Textos y Análisis de Sentimientos

Curso de Formación Continua | Universidad de Córdoba | Curso 2025/26

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Fundamentos básicos en R

Jose V. Die Ramón

Córdoba, octubre 2025

Módulo : Fundamentos básicos de R

- Instalación de R & RStudio
- Instalación de paquetes en R
- Ejecución de scripts en RStudio
- Tipos de objetos : vectores y tablas de datos
- Manipulación de objetos

R

- **INTERACTIVO** , lenguaje de programación. Deriva del paquete estadístico S. Analistas de Datos
- **EJECUTABLE**, como en cualquier otro lenguaje de programación podemos crear scripts
- **LIBRE** y **CÓDIGO ABIERTO**
- **MULTIPLATAFORMA**, Windows, Mac OS, Linux, Unix
- **COMUNIDAD de USUARIOS**, Stackoverflow

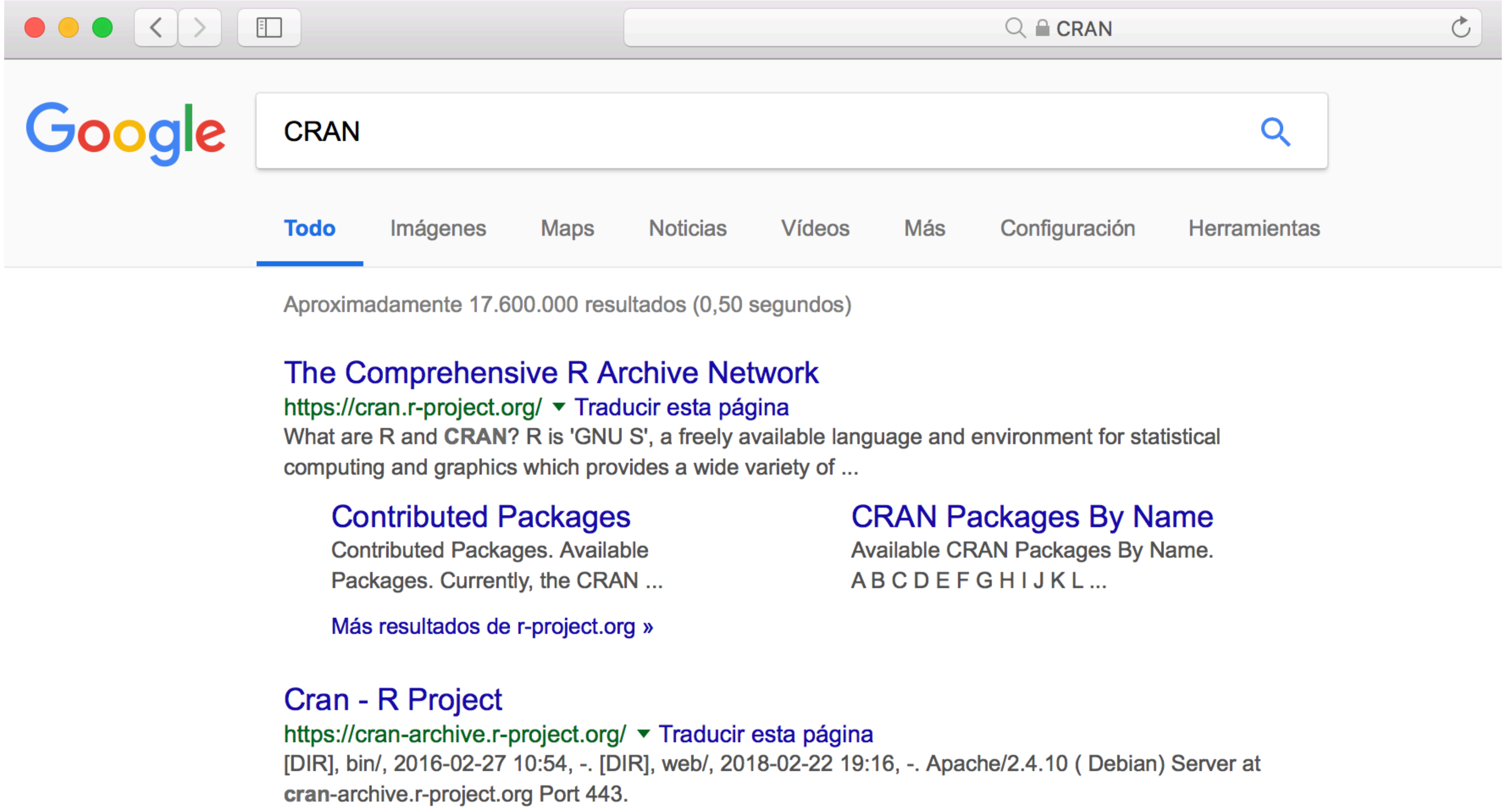
INSTALACIÓN DE SOFTWARE

- **R** , lenguaje de programación que usaremos para el Análisis de Datos / Textos / Sentimiento

- **RStudio**, entorno en formato escritorio que usaremos para editar, organizar y probar nuestros scripts

INSTALACIÓN DE SOFTWARE

- **R** , **C**omprenhensive **R** **A**rchive **N**etwork (**CRAN**)



Aproximadamente 17.600.000 resultados (0,50 segundos)

The Comprehensive R Archive Network
https://cran.r-project.org/ ▾ Traducir esta página
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 ...

Contributed Packages
Contributed Packages. Available Packages. Currently, the CRAN ...

CRAN Packages By Name
Available CRAN Packages By Name. A B C D E F G H I J K L ...

Más resultados de r-project.org »

Cran - R Project
https://cran-archive.r-project.org/ ▾ Traducir esta página
[DIR], bin/, 2016-02-27 10:54, -. [DIR], web/, 2018-02-22 19:16, -. Apache/2.4.10 (Debian) Server at **cran**-archive.r-project.org Port 443.

INSTALACIÓN DE SOFTWARE

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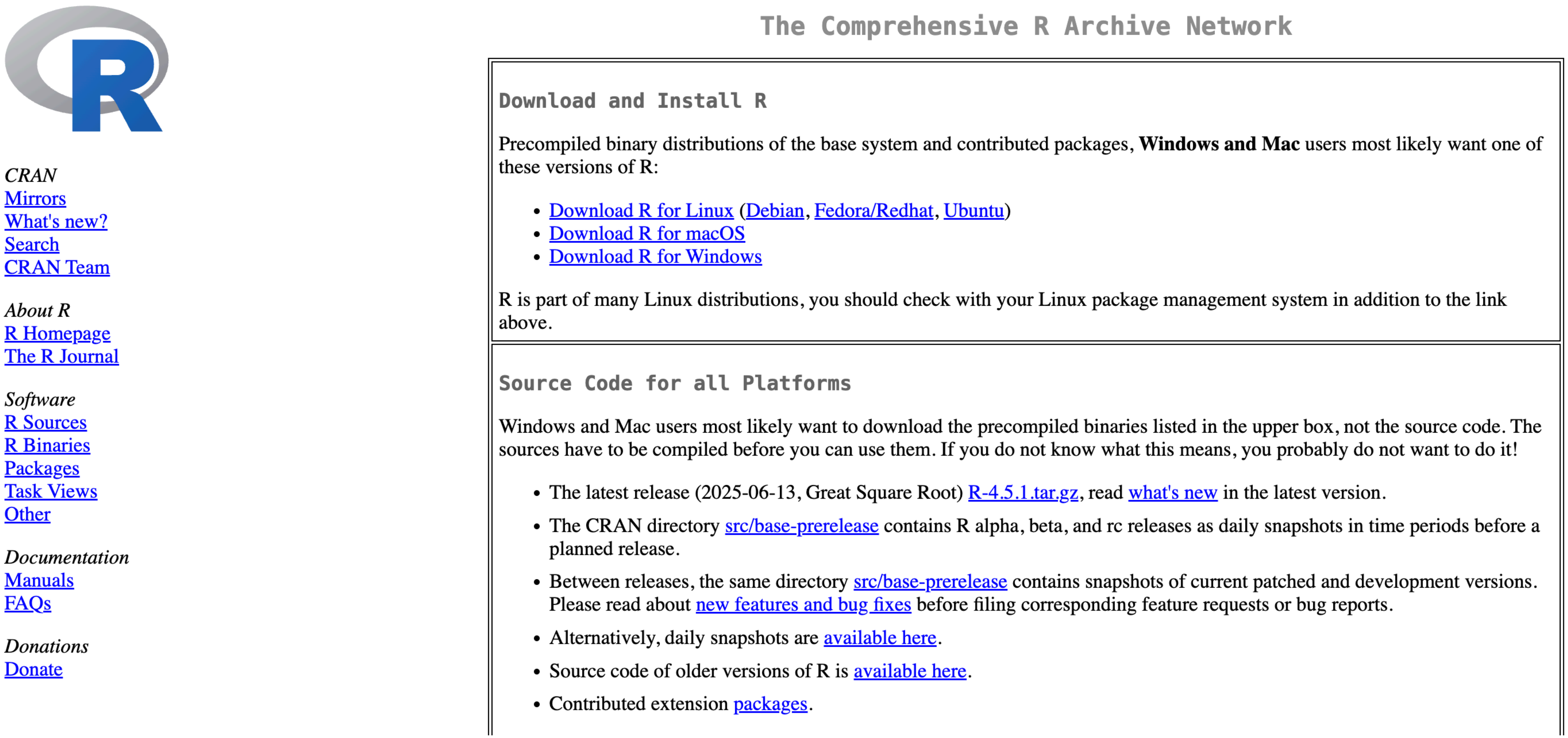

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The Comprehensive R Archive Network

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 (Debian, Fedora/Redhat, Ubuntu)
- Download R for macOS
- Download R for Windows

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

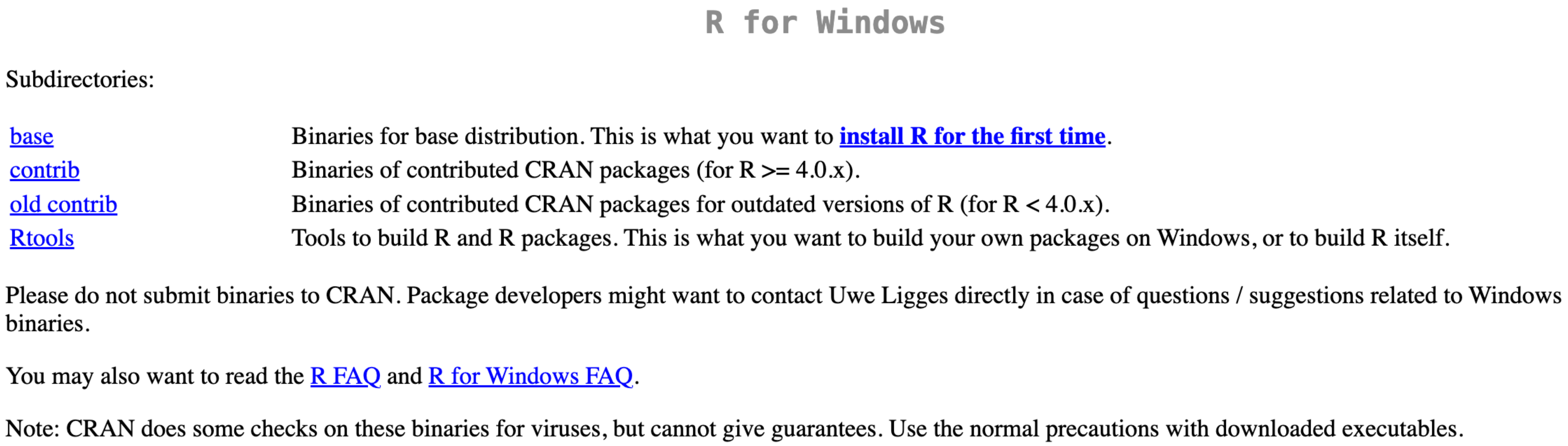
Source Code for all Platforms

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 (2025-06-13, Great Square Root) R-4.5.1.tar.gz, read what's new in the latest version.
- The CRAN directory src/base-prerelease contains R alpha, beta, and rc releases as daily snapshots in time periods before a planned release.
- Between releases, the same directory src/base-prerelease contains snapshots of current patched and development versions. Please read about new features and bug fixes before filing corresponding feature requests or bug reports.
- Alternatively, daily snapshots are available here.
- Source code of older versions of R is available here.
- Contributed extension packages.

INSTALACIÓN DE SOFTWARE

- **R** , **C**omprenhensive **R** **A**rchive **N**etwork (**CRAN**)



R for Windows

Subdirectories:

base	Binaries for base distribution. This is what you want to **install R for the first time**.
contrib	Binaries of contributed CRAN packages (for R >= 4.0.x).
old contrib	Binaries of contributed CRAN packages for outdated versions of R (for R < 4.0.x).
Rtools	Tools to build R and R packages. 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 Uwe Ligges directly in case of questions / suggestions related to Windows binaries.

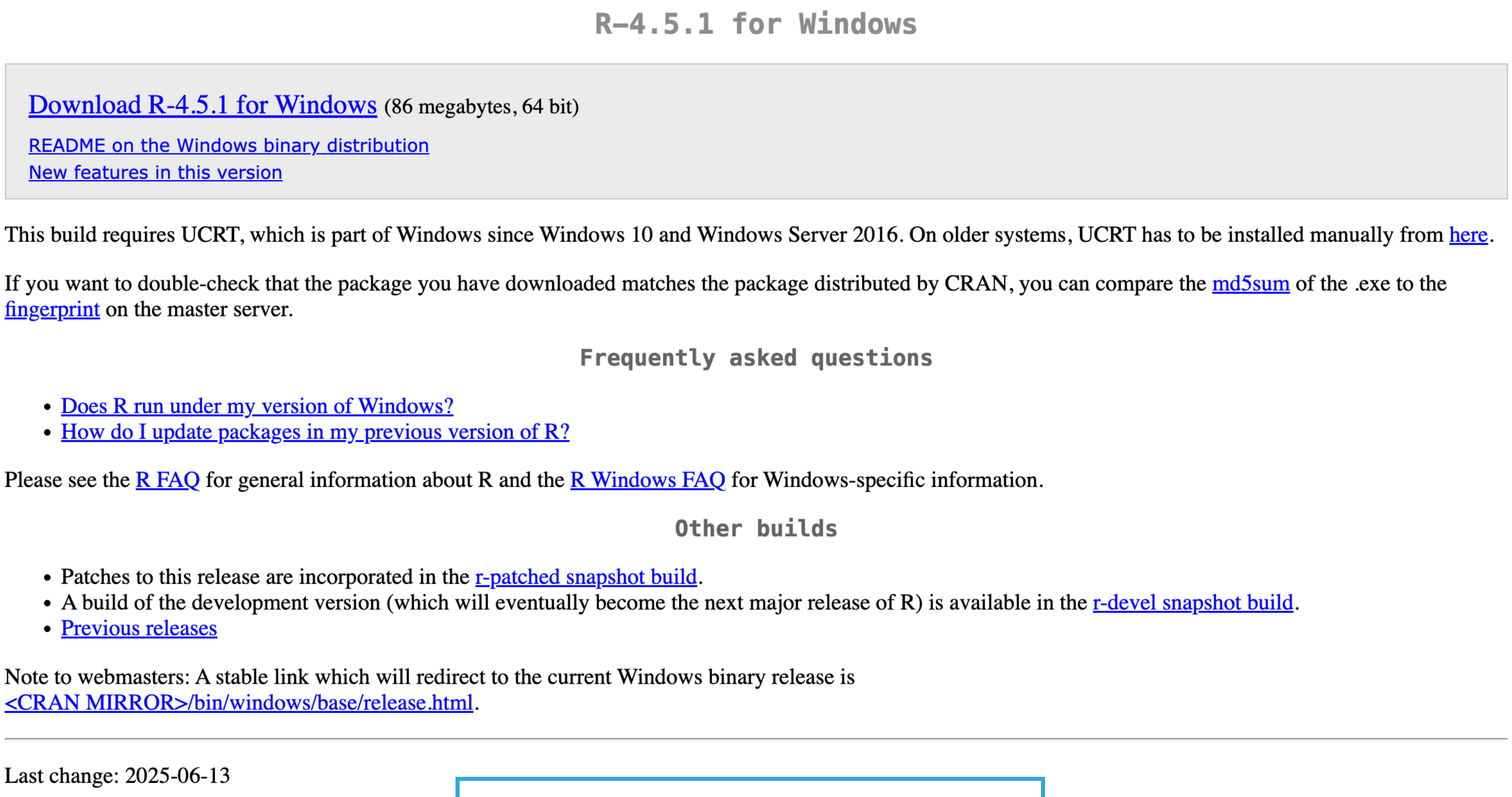
You may also want to read the R FAQ and R for Windows FAQ.

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

`subdirectorio` **`base`**

INSTALACIÓN DE SOFTWARE

- **R** , **C**omprenhensive **R** **A**rchive **N**etwork (**CRAN**)



R-4.5.1 for Windows

Download R-4.5.1 for Windows (86 megabytes, 64 bit)
README on the Windows binary distribution
New features in this version

This build requires UCRT, which is part of Windows since Windows 10 and Windows Server 2016. On older systems, UCRT has to be installed manually from here.

If you want to double-check that the package you have downloaded matches the package distributed by CRAN, you can compare the md5sum of the .exe to the fingerprint on the master server.

Frequently asked questions

- Does R run under my version of Windows?
- How do I update packages in my previous version of 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

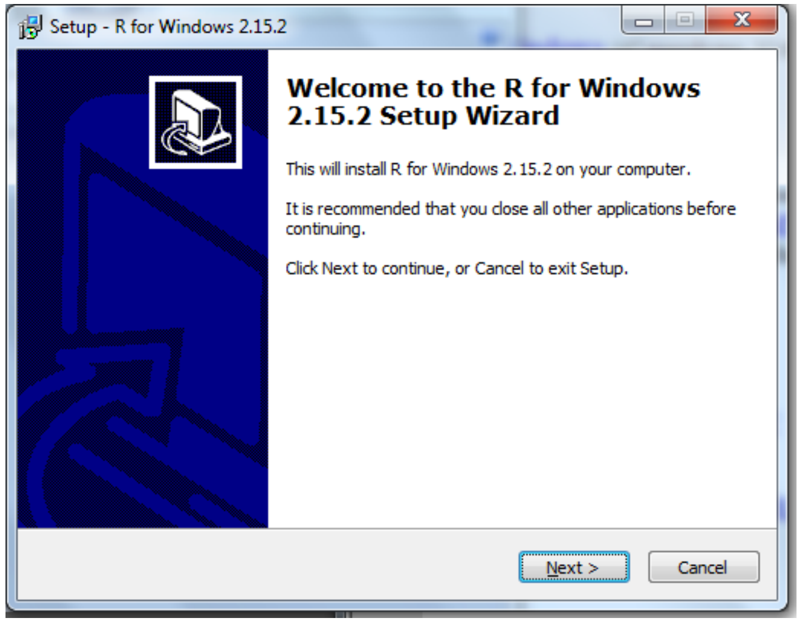
Note to webmasters: A stable link which will redirect to the current Windows binary release is
<CRAN MIRROR>/bin/windows/base/release.html.

Last change: 2025-06-13

subdirectorio **base**

INSTALACIÓN DE SOFTWARE

- **R** , **C**omprenhensive **R** **A**rchive **N**etwork (**CRAN**)

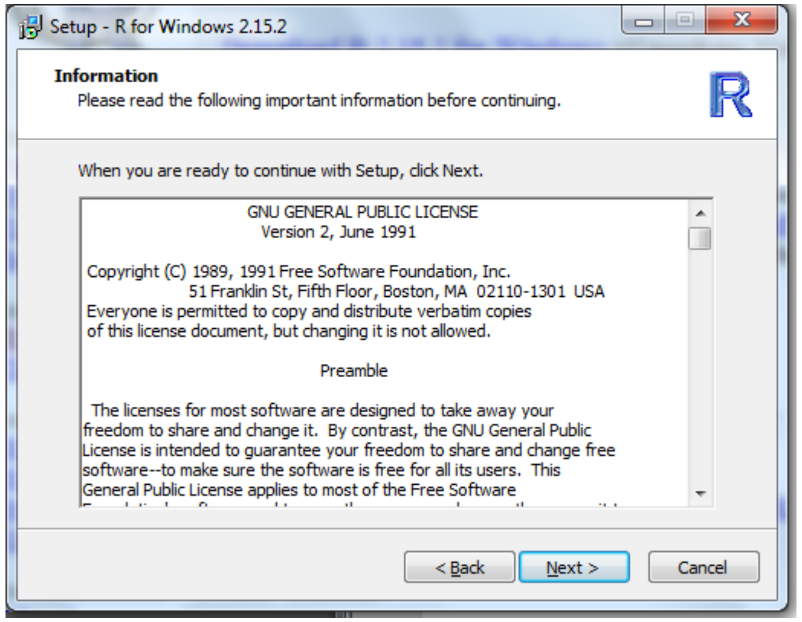


Welcome to the R for Windows 2.15.2 Setup Wizard

This will install R for Windows 2.15.2 on your computer.

It is recommended that you close all other applications before continuing.

Click Next to continue, or Cancel to exit Setup.



Information

Please read the following important information before continuing.

When you are ready to continue with Setup, click Next.

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Version 2, June 1991

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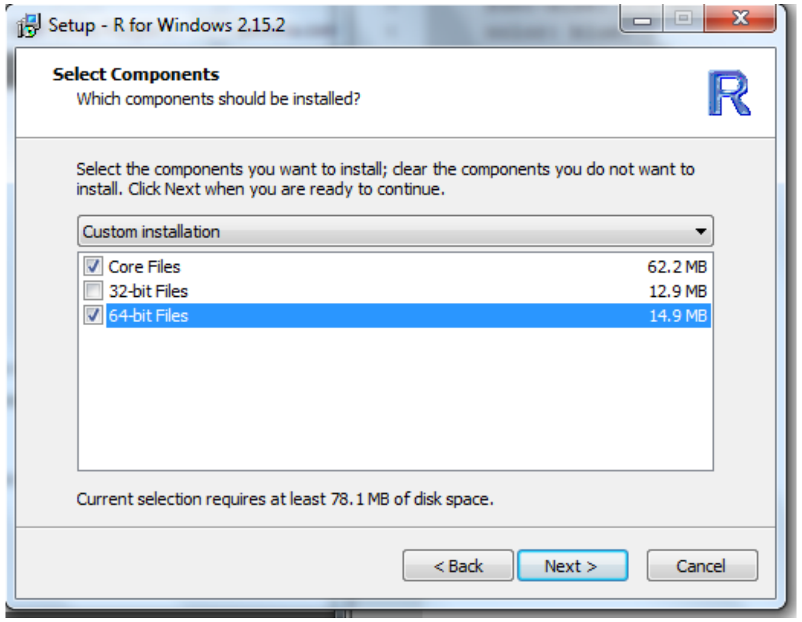
Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software



Select Components

Which components should be installed?

Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.

Custom installation

☑ Core Files	62.2 MB
☐ 32-bit Files	12.9 MB
☑ 64-bit Files	14.9 MB

Current selection requires at least 78.1 MB of disk space.

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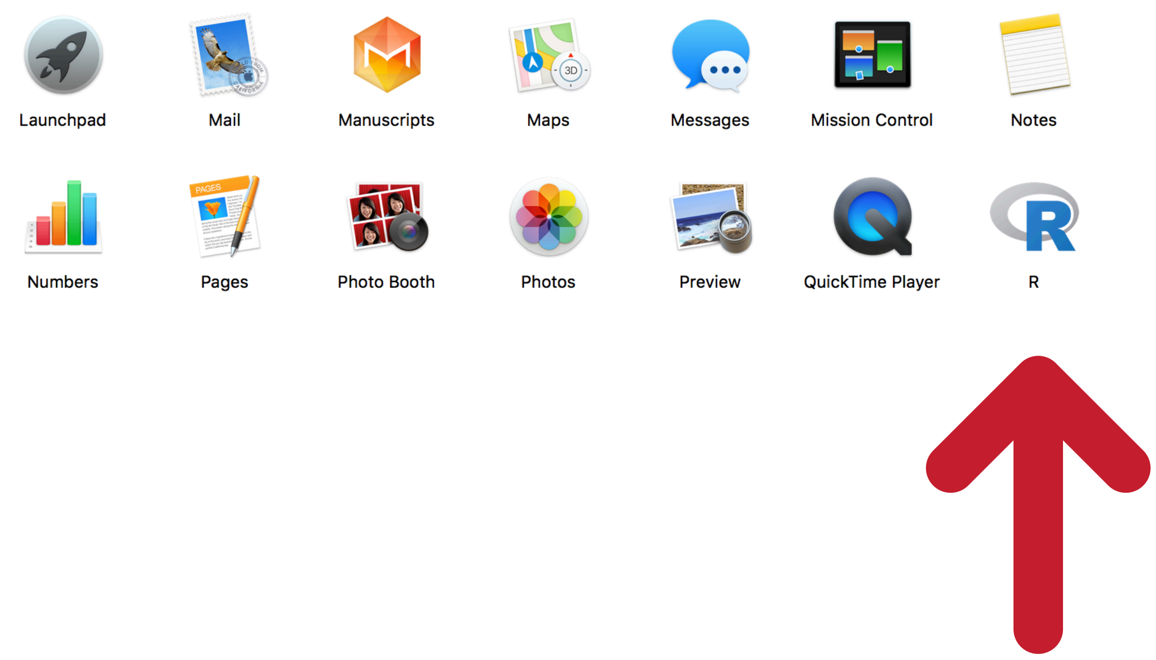
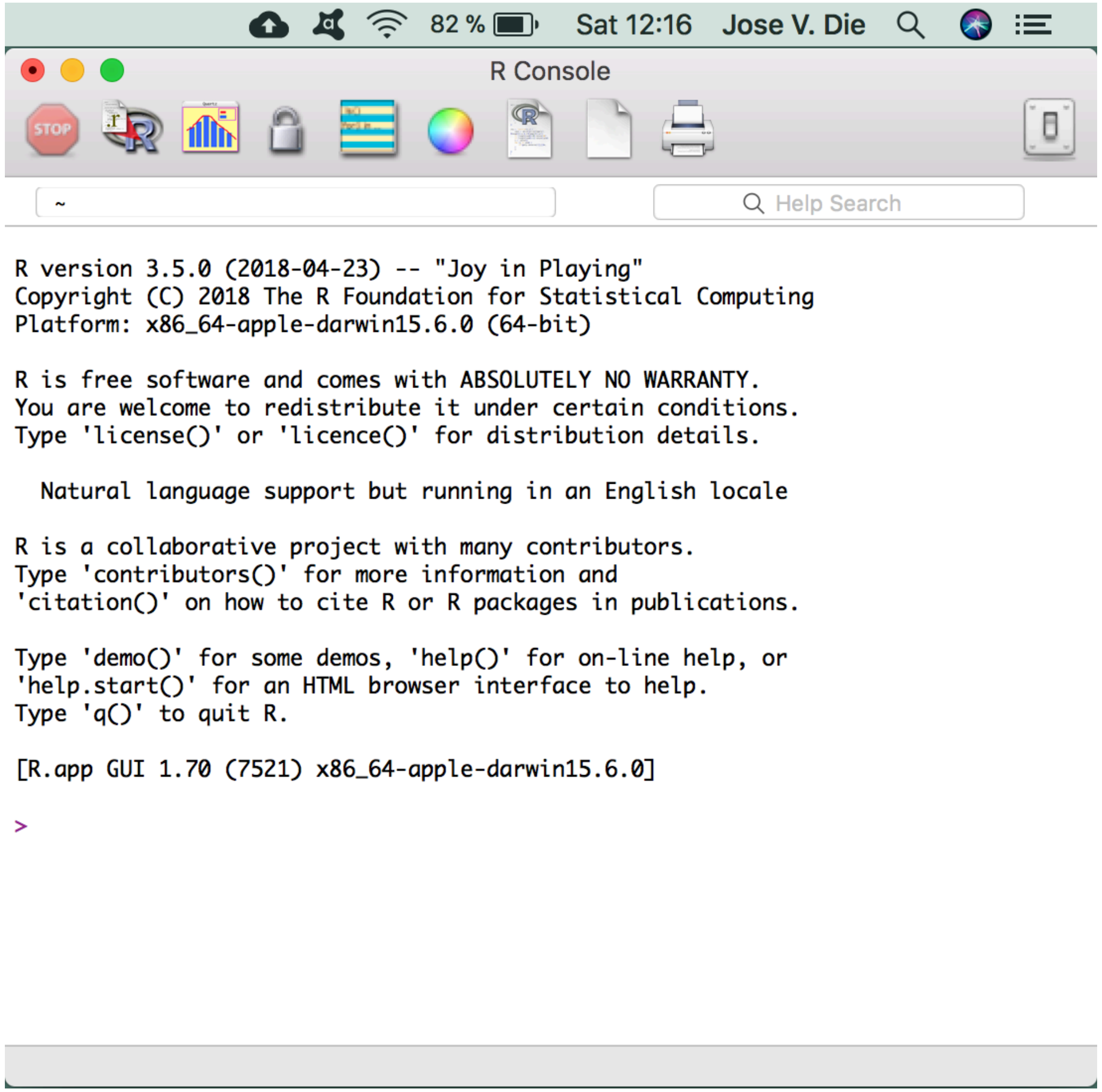




```
R version 3.5.0 (2018-04-23) -- "Joy in Playing"
Copyright (C) 2018 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin15.6.0 (64-bit)

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.

  Natural language support but running in an English locale

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.

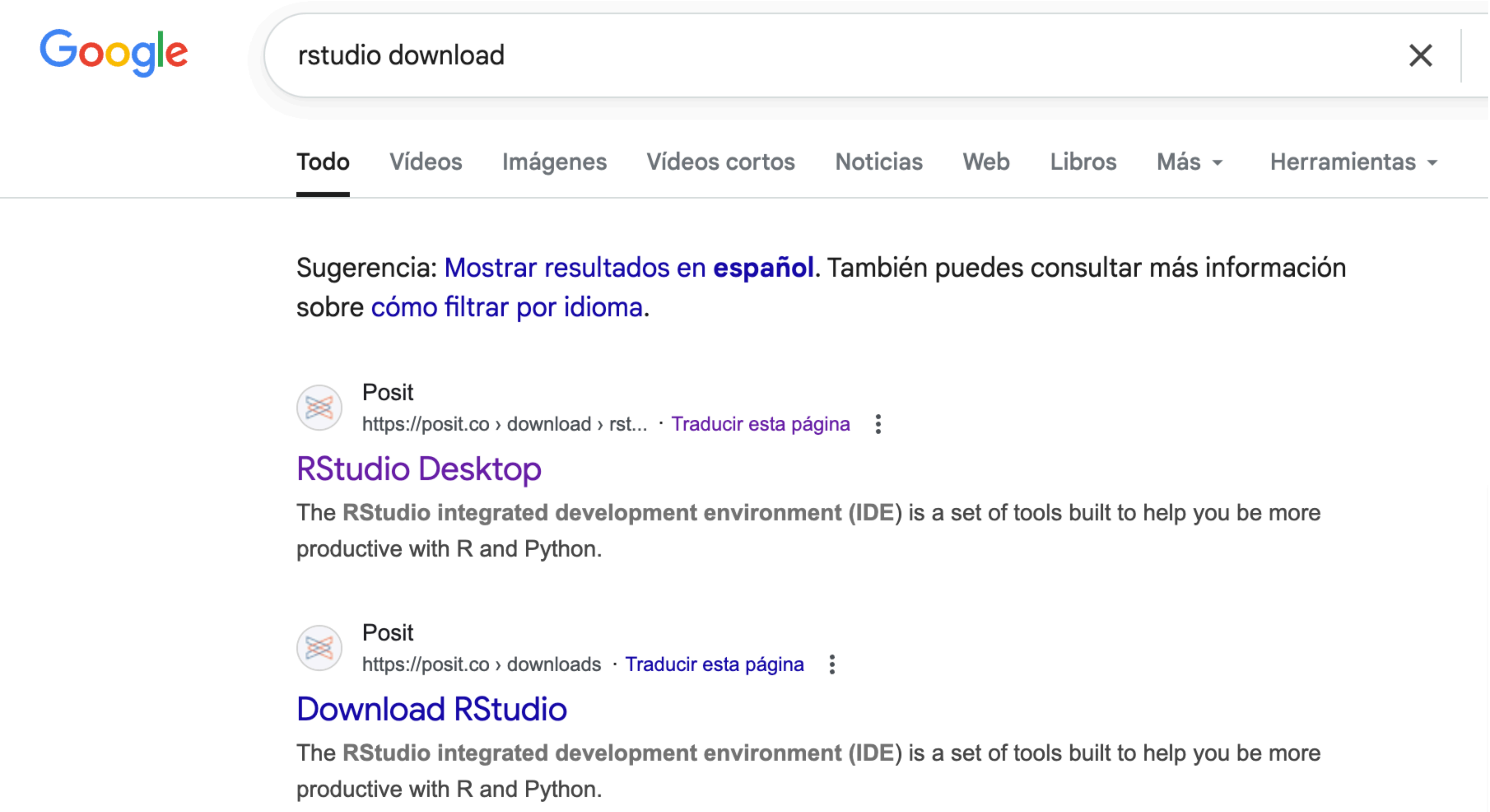
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[R.app GUI 1.70 (7521) x86_64-apple-darwin15.6.0]

>
```

INSTALACIÓN DE SOFTWARE

- **RStudio** , entorno en formato escritorio que usaremos para editar, organizar y probar nuestros scripts



Sugerencia: Mostrar resultados en **español**. También puedes consultar más información sobre cómo filtrar por idioma.

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RStudio Desktop

The **RStudio integrated development environment (IDE)** is a set of tools built to help you be more productive with R and Python.

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Download RStudio

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INSTALACIÓN DE SOFTWARE

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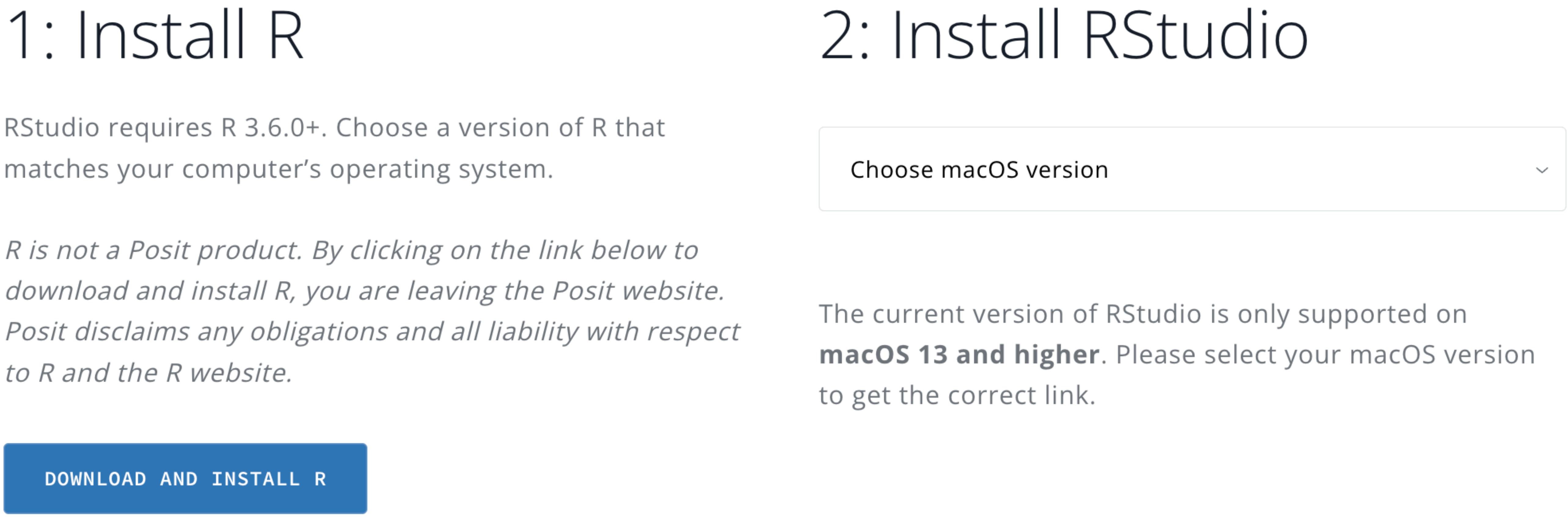


1: Install R

RStudio requires R 3.6.0+. Choose a version of R that matches your computer's operating system.

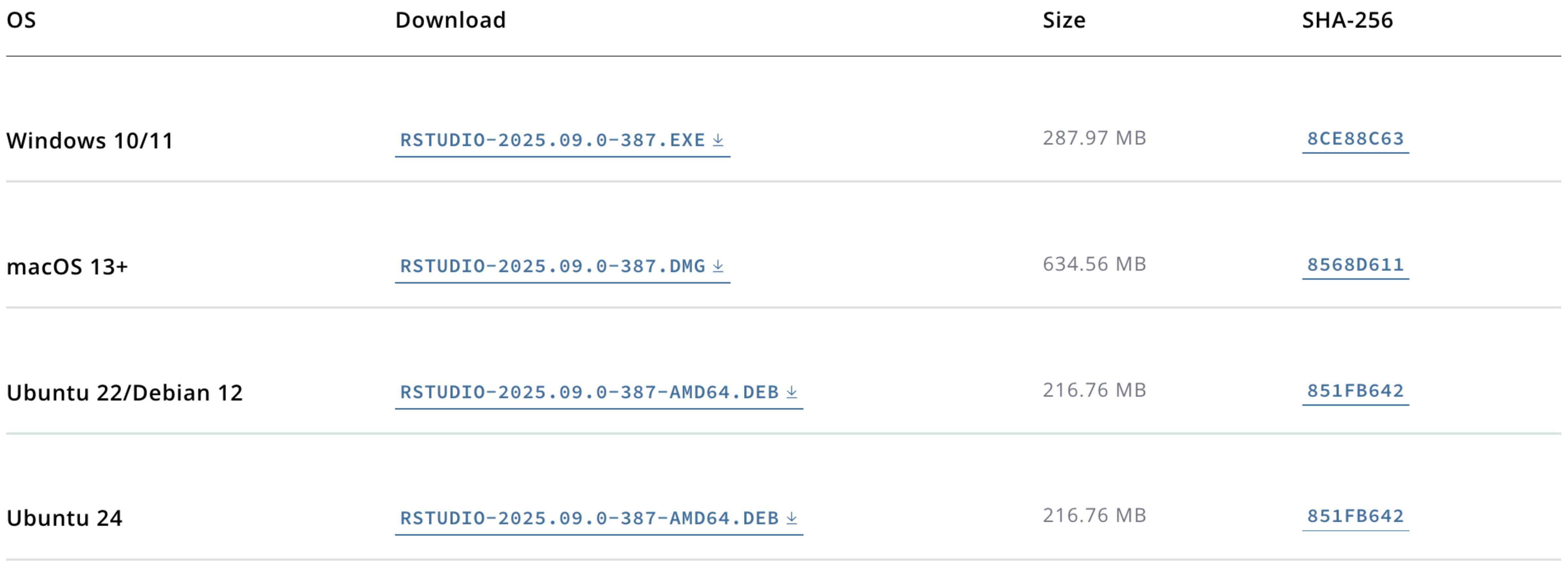
R is not a Posit product. By clicking on the link below to download and install R, you are leaving the Posit website. Posit disclaims any obligations and all liability with respect to R and the R website.

2: Install RStudio

The current version of RStudio is only supported on **macOS 13 and higher**. Please select your macOS version to get the correct link.

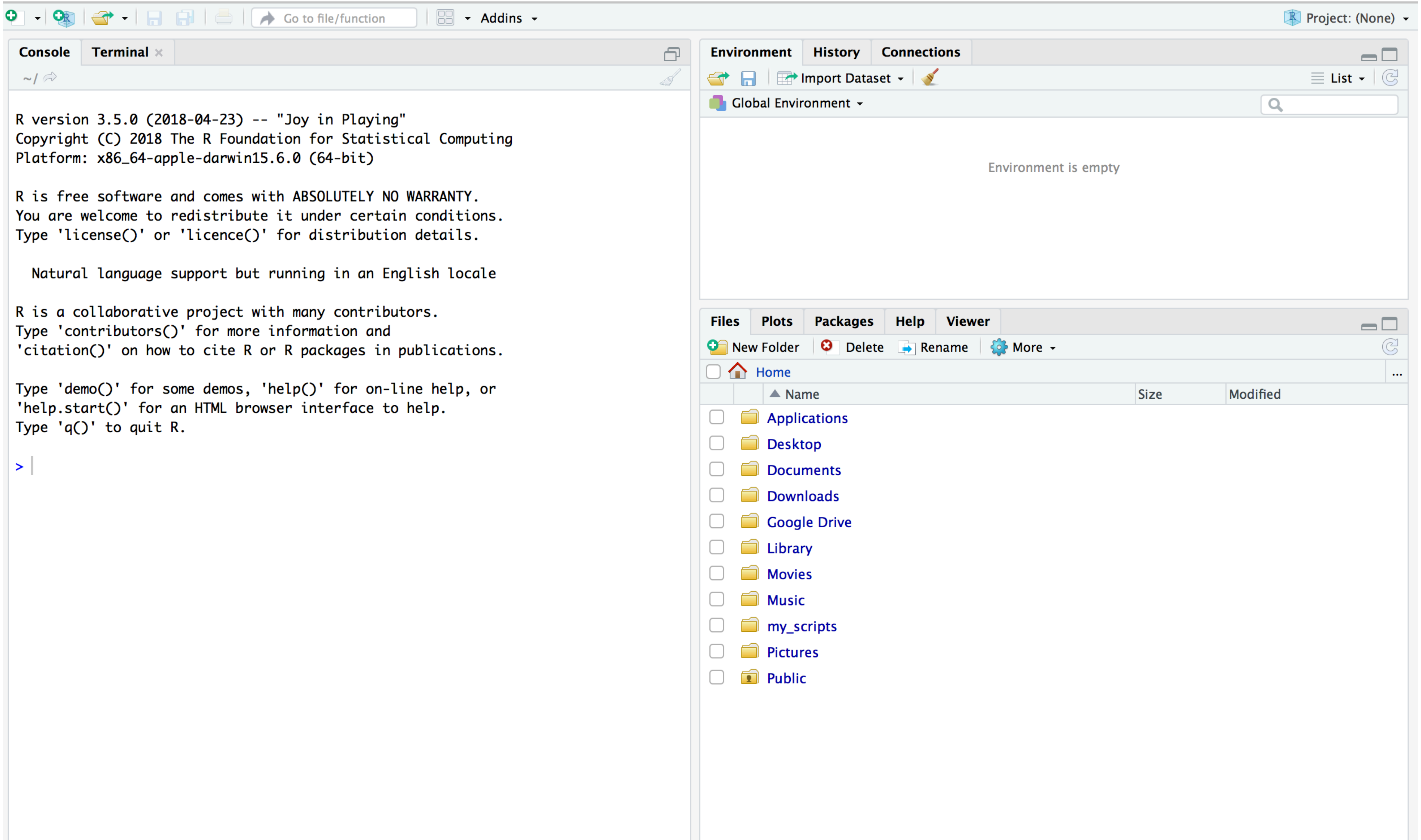
INSTALACIÓN DE SOFTWARE

- **RStudio** , entorno en formato escritorio que usaremos para editar, organizar y probar nuestros scripts



OS	Download	Size	SHA-256
Windows 10/11	RSTUDIO-2025.09.0-387.EXE ⤓	287.97 MB	8CE88C63
macOS 13+	RSTUDIO-2025.09.0-387.DMG ⤓	634.56 MB	8568D611
Ubuntu 22/Debian 12	RSTUDIO-2025.09.0-387-AMD64.DEB ⤓	216.76 MB	851FB642
Ubuntu 24	RSTUDIO-2025.09.0-387-AMD64.DEB ⤓	216.76 MB	851FB642

USANDO RSTUDIO POR PRIMERA VEZ



```
R version 3.5.0 (2018-04-23) -- "Joy in Playing"
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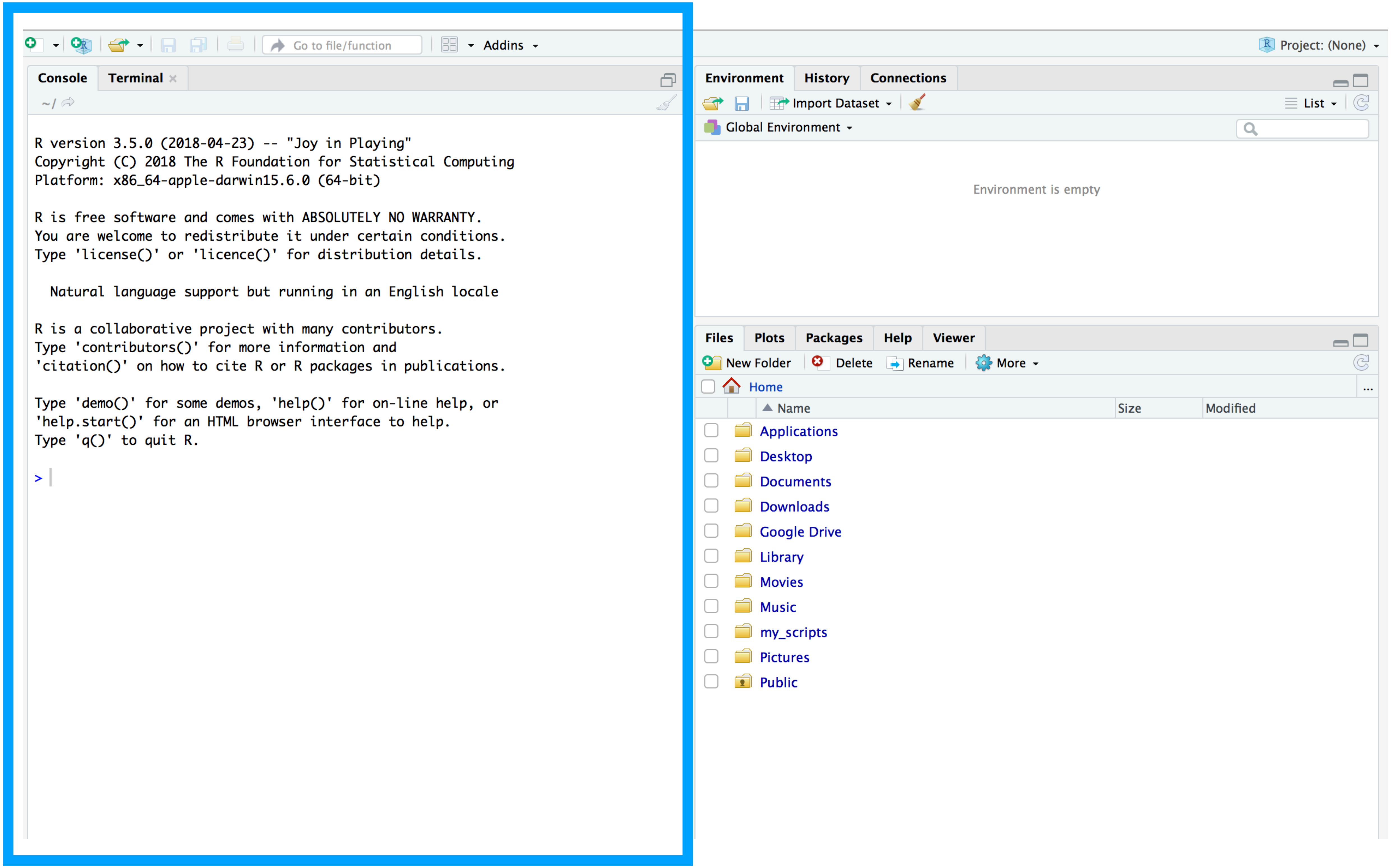
>
```

USANDO RSTUDIO POR PRIMERA VEZ



```
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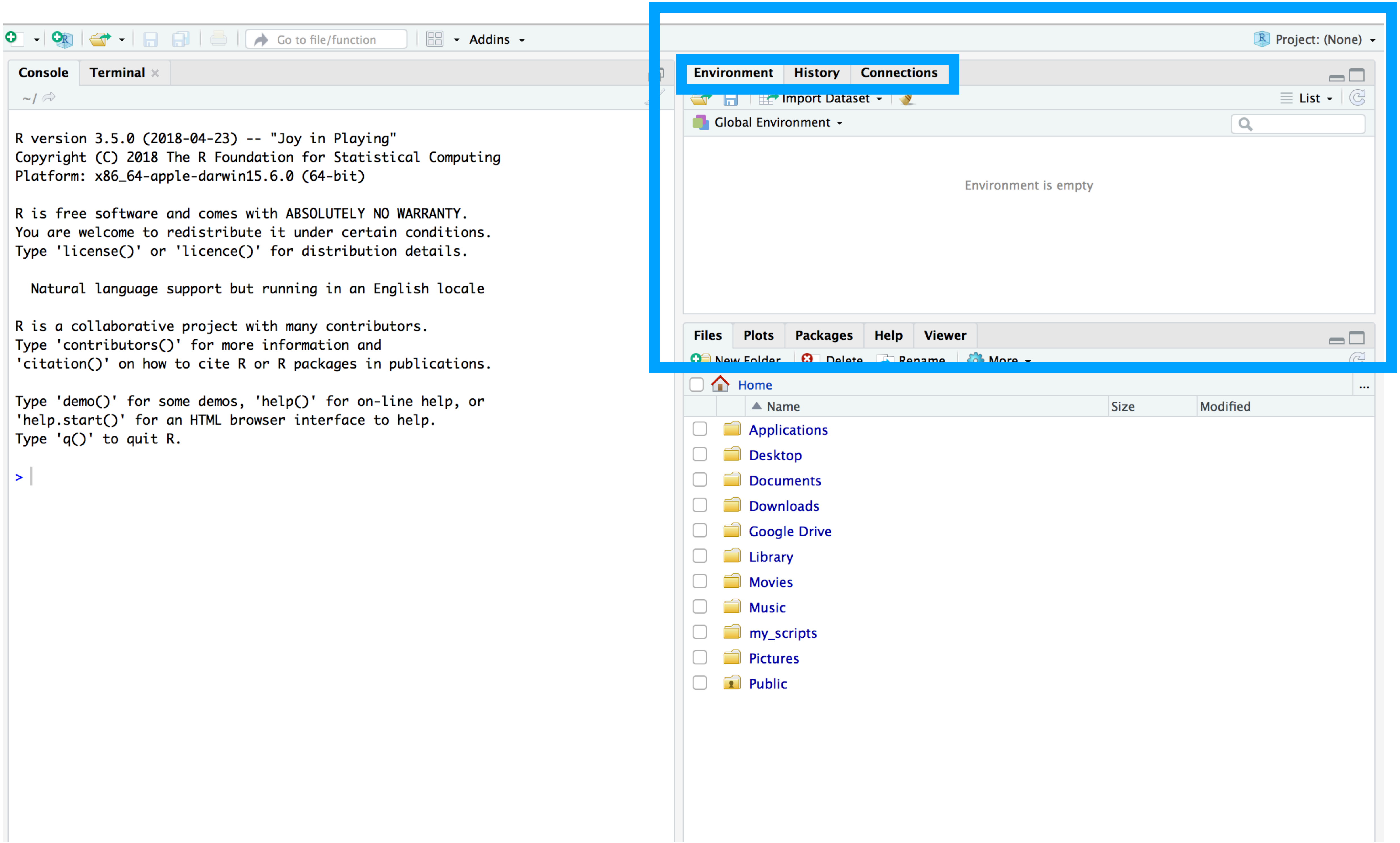
> 
```

USANDO RSTUDIO POR PRIMERA VEZ



```
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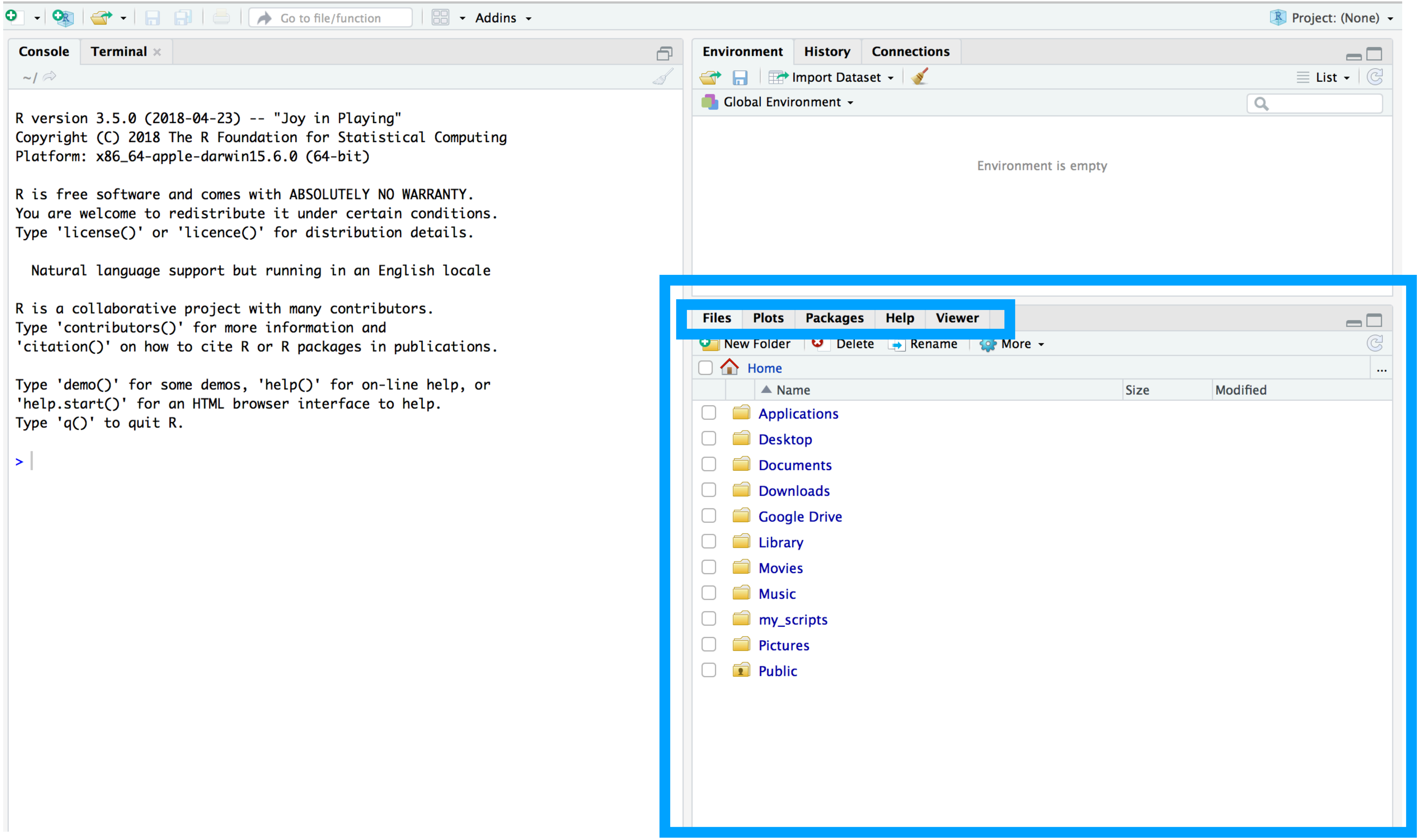

```
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Type 'q()' to quit R.

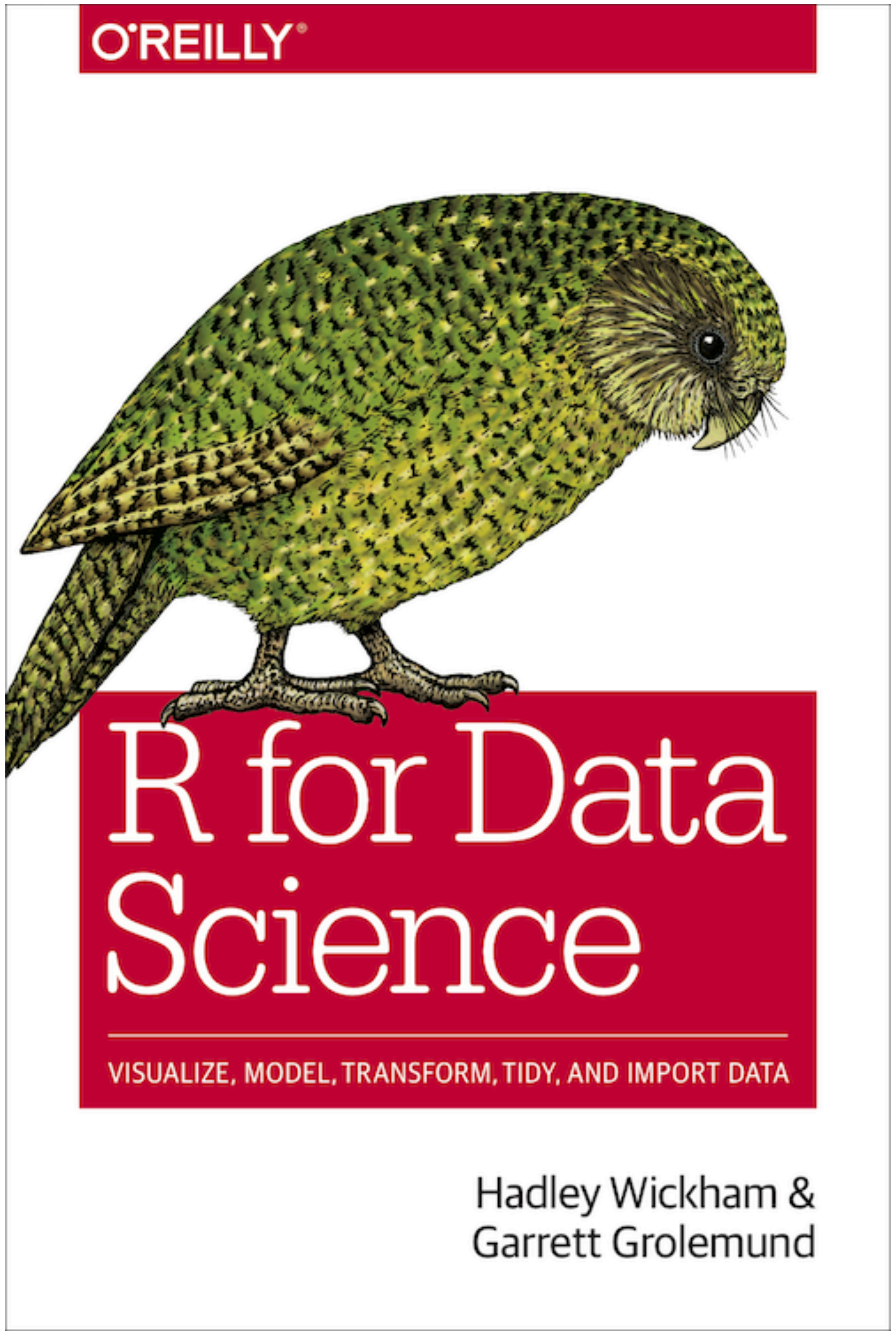
> 
```

Environment is empty

Home

Name	Size	Modified
Applications		
Desktop		
Documents		
Downloads		
Google Drive		
Library		
Movies		
Music		
my_scripts		
Pictures		
Public		

OPCIONES GLOBALES



- **What is real ?**

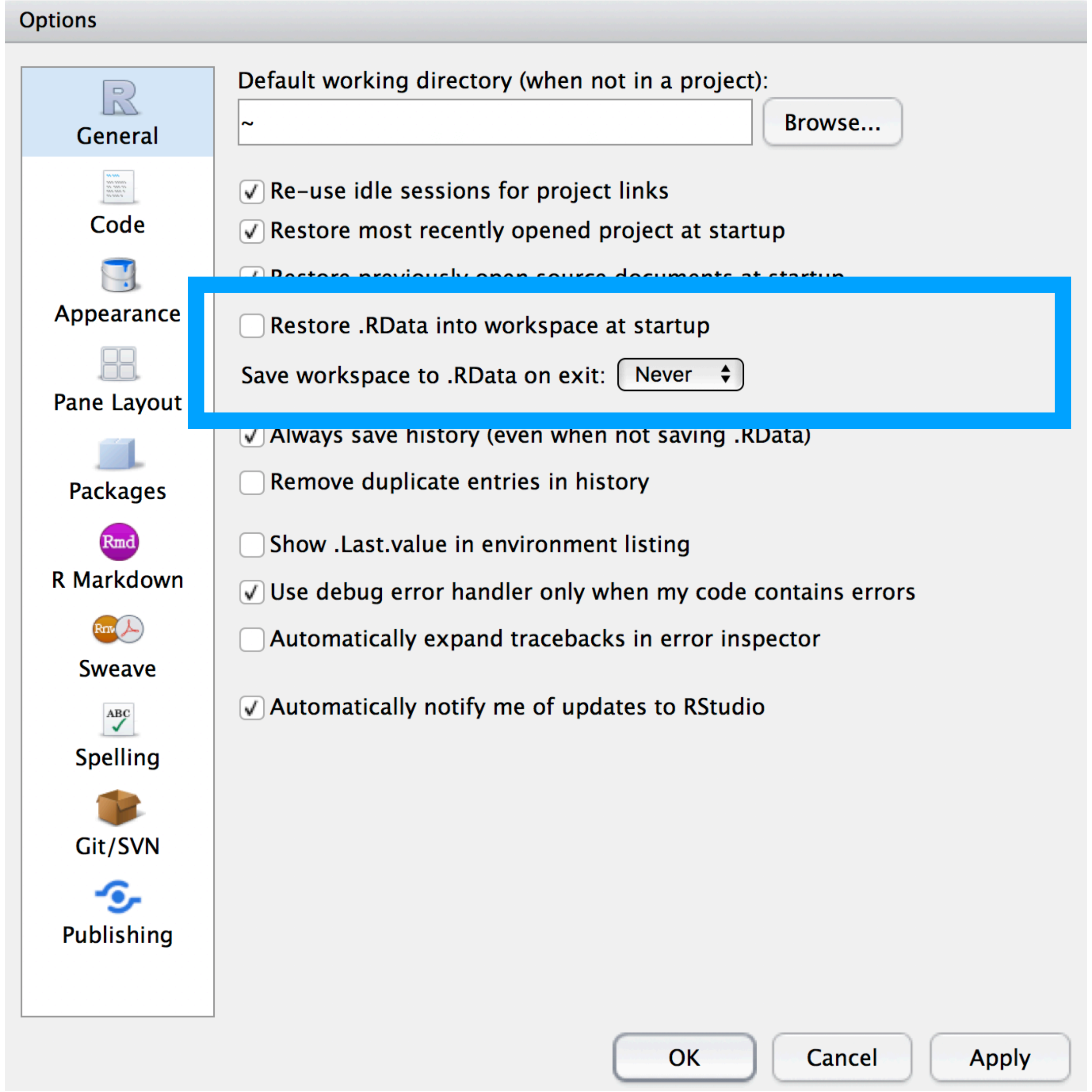
As a beginning R user, it's OK to consider your environment (i.e. the objects listed in the environment pane) "real". However, in the long run, you'll be much better off if you **consider your R scripts as "real"**.

With your R scripts (and your data files), you can recreate the environment. It's much harder to recreate your R scripts from your environment! (…) .

To foster this behaviour, I highly recommend that you instruct RStudio not to preserve your workspace between sessions.

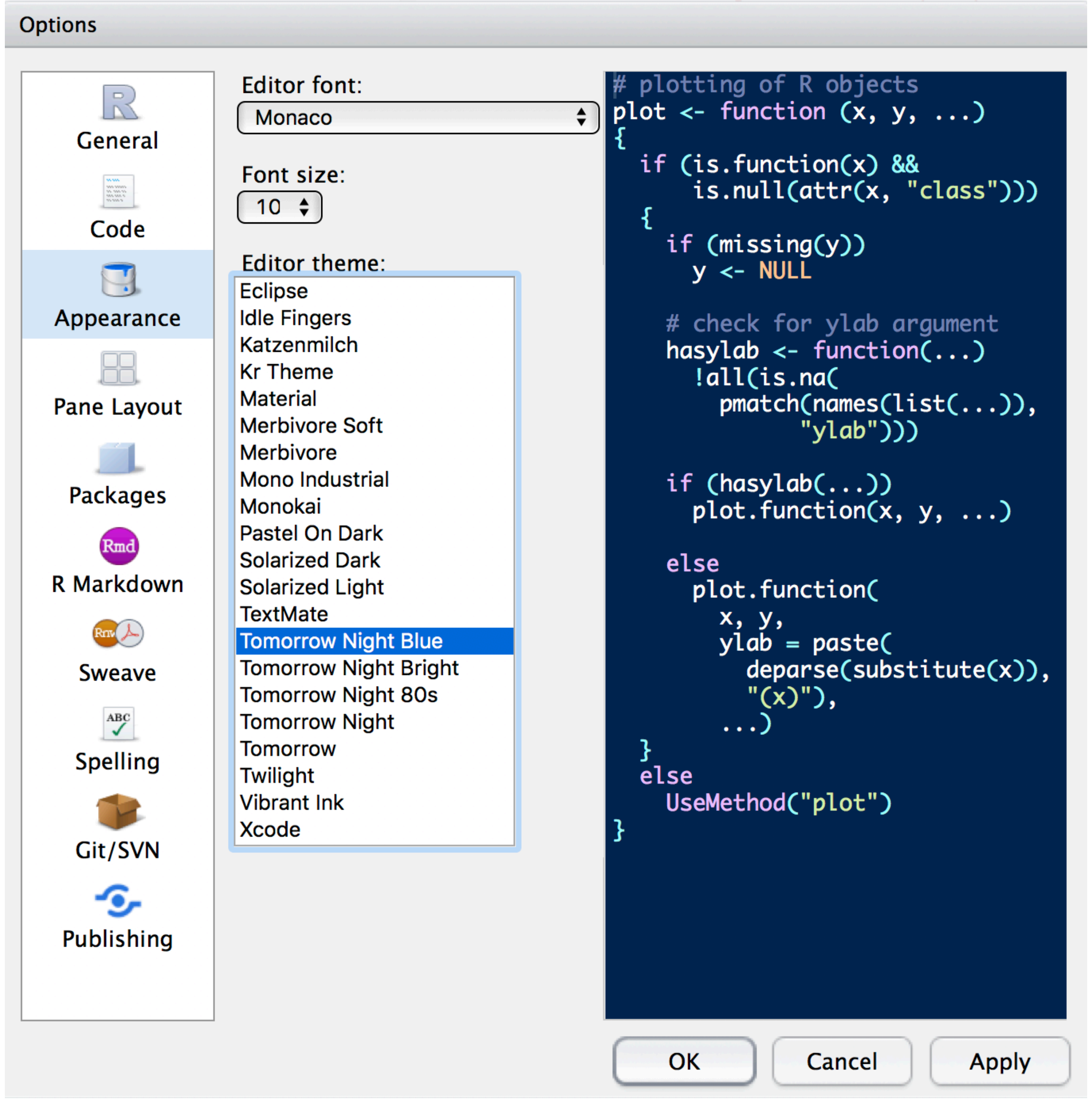
https://r4ds.had.co.nz/index.html

OPCIONES GLOBALES



Default working directory (when not in a project): ~

☑ Re-use idle sessions for project links
☑ Restore most recently opened project at startup
☑ Restore previously open source documents at startup
☐ Restore .RData into workspace at startup
Save workspace to .RData on exit: Never
☑ Always save history (even when not saving .RData)
☐ Remove duplicate entries in history
☐ Show .Last.value in environment listing
☑ Use debug error handler only when my code contains errors
☐ Automatically expand tracebacks in error inspector
☑ Automatically notify me of updates to RStudio



Editor font: Monaco

Font size: 10

Editor theme:

- Eclipse
- Idle Fingers
- Katzenmilch
- Kr Theme
- Material
- Merbivore Soft
- Merbivore
- Mono Industrial
- Monokai
- Pastel On Dark
- Solarized Dark
- Solarized Light
- TextMate
- Tomorrow Night Blue
- Tomorrow Night Bright
- Tomorrow Night 80s
- Tomorrow Night
- Tomorrow
- Twilight
- Vibrant Ink
- Xcode

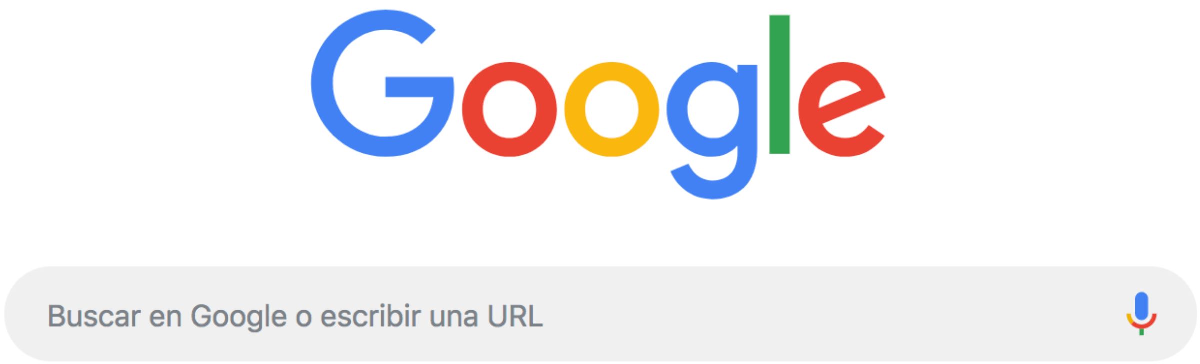
```
# plotting of R objects
plot <- function (x, y, ...)
{
  if (is.function(x) &&
      is.null(attr(x, "class")))
  {
    if (missing(y))
      y <- NULL

    # check for ylab argument
    hasylab <- function(...)
      !all(is.na(
        pmatch(names(list(...)),
               "ylab")))

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

    else
      plot.function(
        x, y,
        ylab = paste(
          deparse(substitute(x)),
          "(x)"),
        ...)
  }
  else
    UseMethod("plot")
}
```

AYUDA



Rstats

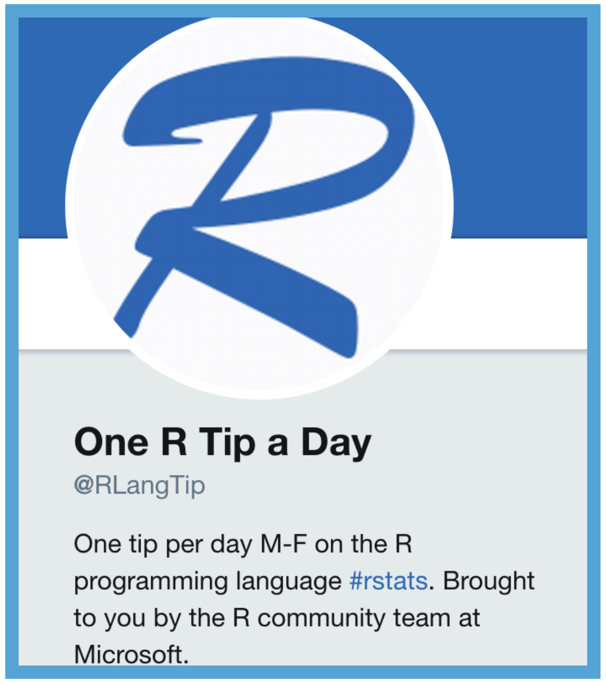
stackoverflow

stackoverflow en español

RStudio Tips

@rstudiotips

Useful features, shortcuts, and ideas for working with the RStudio IDE to develop R analyses, packages, and documents.

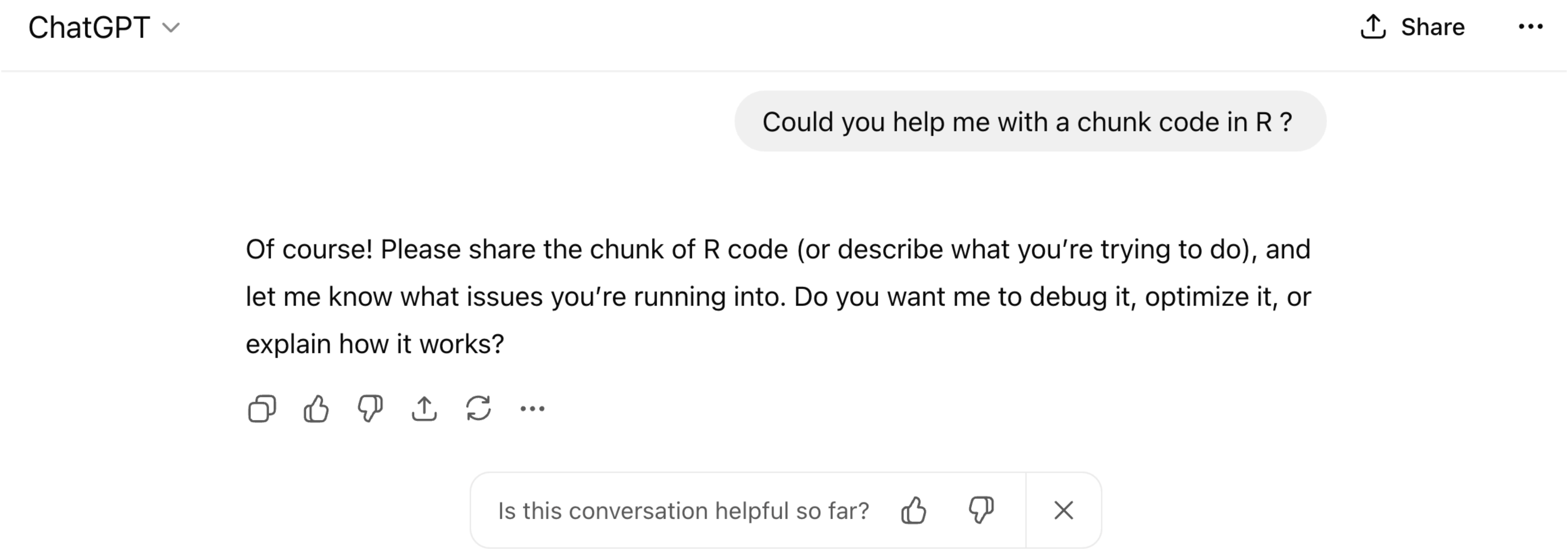


One R Tip a Day

@RLangTip

One tip per day M-F on the R programming language #rstats. Brought to you by the R community team at Microsoft.

AYUDA



Could you help me with a chunk code in R ?

Of course! Please share the chunk of R code (or describe what you're trying to do), and let me know what issues you're running into. Do you want me to debug it, optimize it, or explain how it works?

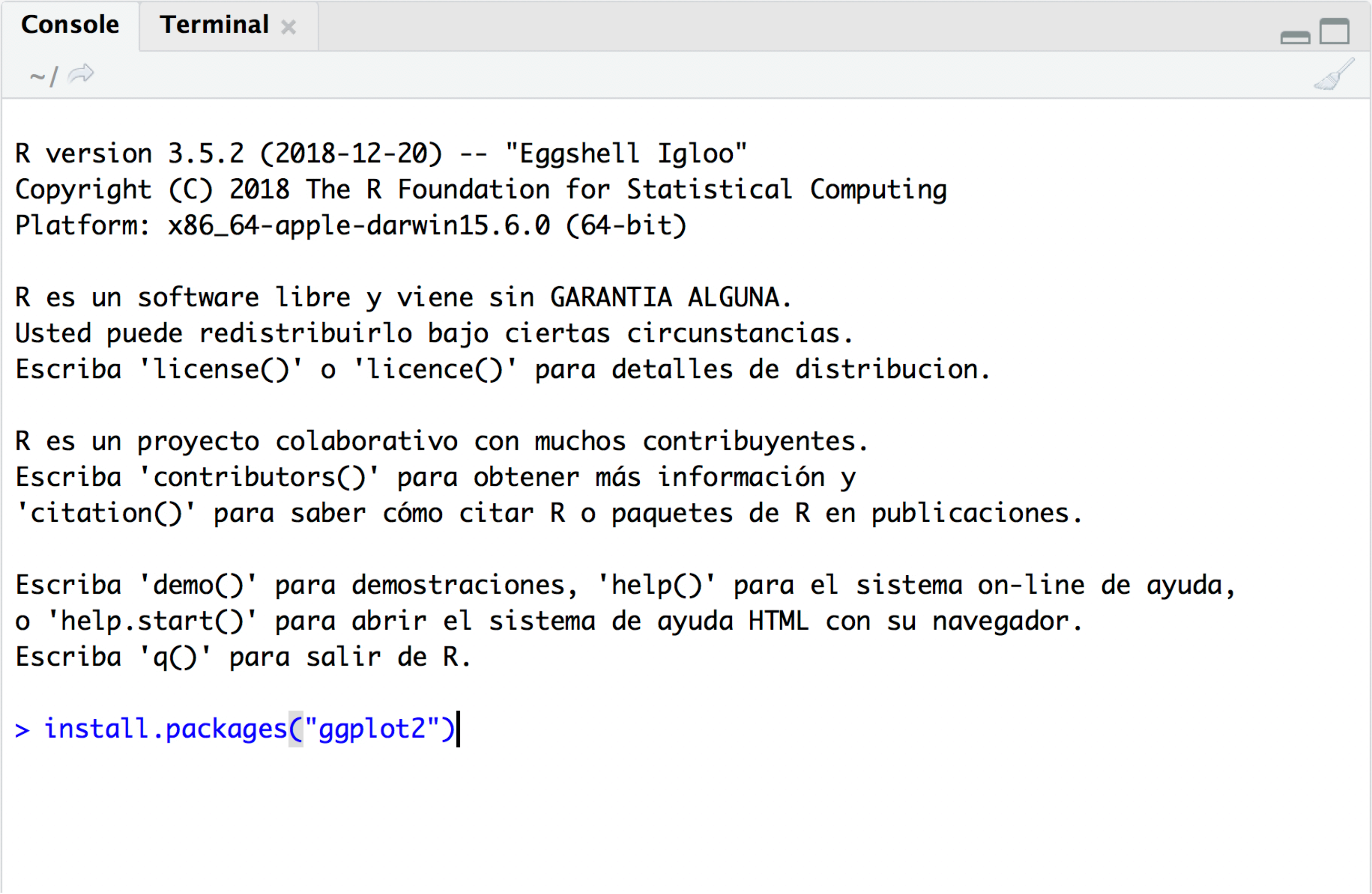
Is this conversation helpful so far?

INSTALACIÓN DE PAQUETES R

- **install.packages ( )** , función para instalar paquetes en **R**

INSTALACIÓN DE PAQUETES R

- **install.packages ( )** , función para instalar paquetes en **R**



```
R version 3.5.2 (2018-12-20) -- "Eggshell Igloo"
Copyright (C) 2018 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin15.6.0 (64-bit)

R es un software libre y viene sin GARANTIA ALGUNA.
Usted puede redistribuirlo bajo ciertas circunstancias.
Escriba 'license()' o 'licence()' para detalles de distribucion.

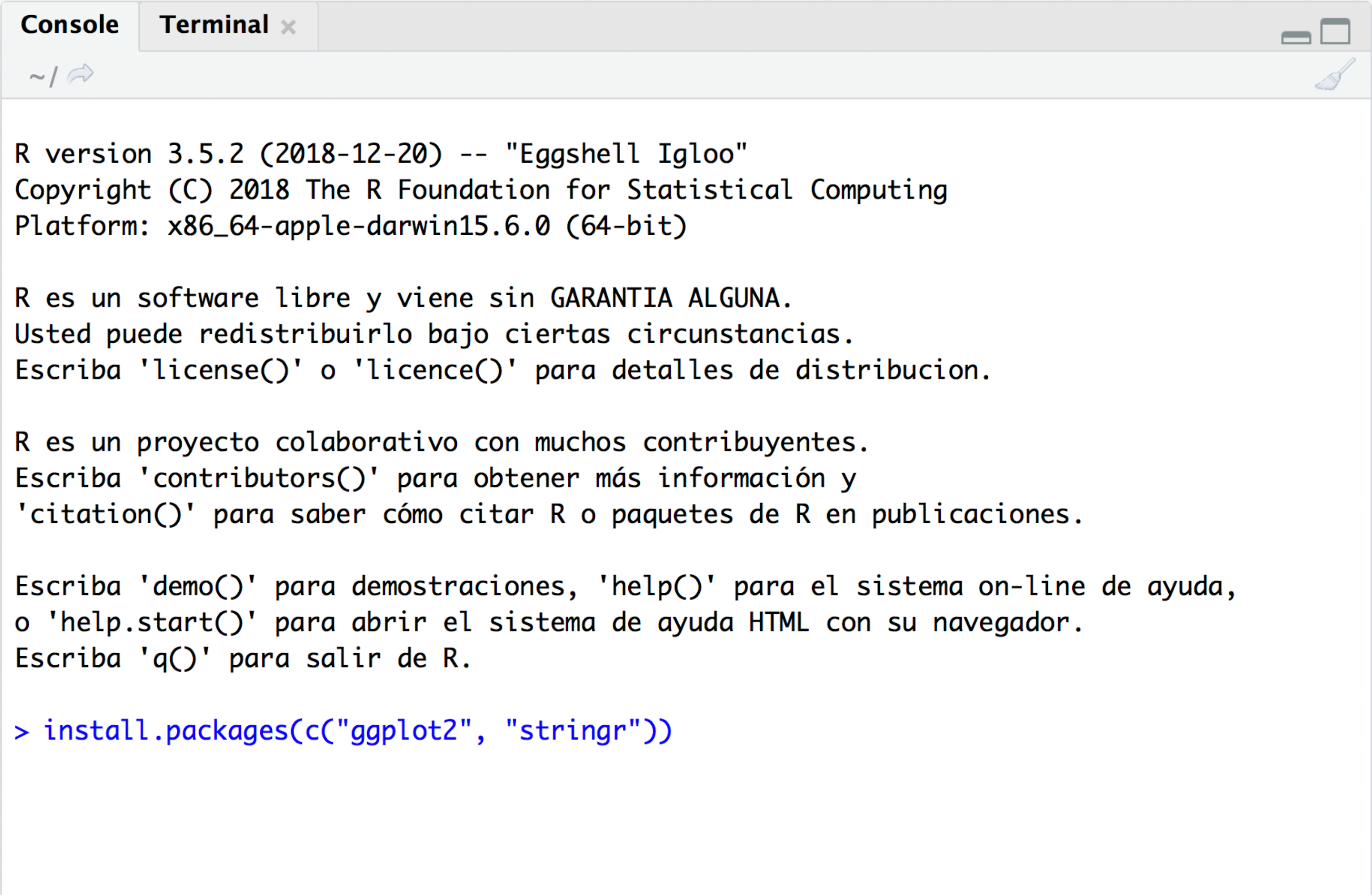
R es un proyecto colaborativo con muchos contribuyentes.
Escriba 'contributors()' para obtener más información y
'citation()' para saber cómo citar R o paquetes de R en publicaciones.

Escriba 'demo()' para demostraciones, 'help()' para el sistema on-line de ayuda,
o 'help.start()' para abrir el sistema de ayuda HTML con su navegador.
Escriba 'q()' para salir de R.

> install.packages("ggplot2")
```

INSTALACIÓN DE PAQUETES R

- **install.packages ( )** , función para instalar paquetes en **R**



```
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Escriba 'q()' para salir de R.

> install.packages(c("ggplot2", "stringr"))
```

- **c (“elemento1”, “elemento2”, … “elementoN”)** , **vector carácter**

INSTALACIÓN DE PAQUETES R

- **installed.packages ( )** , función para mostrar todos los paquetes que hemos instalado

```
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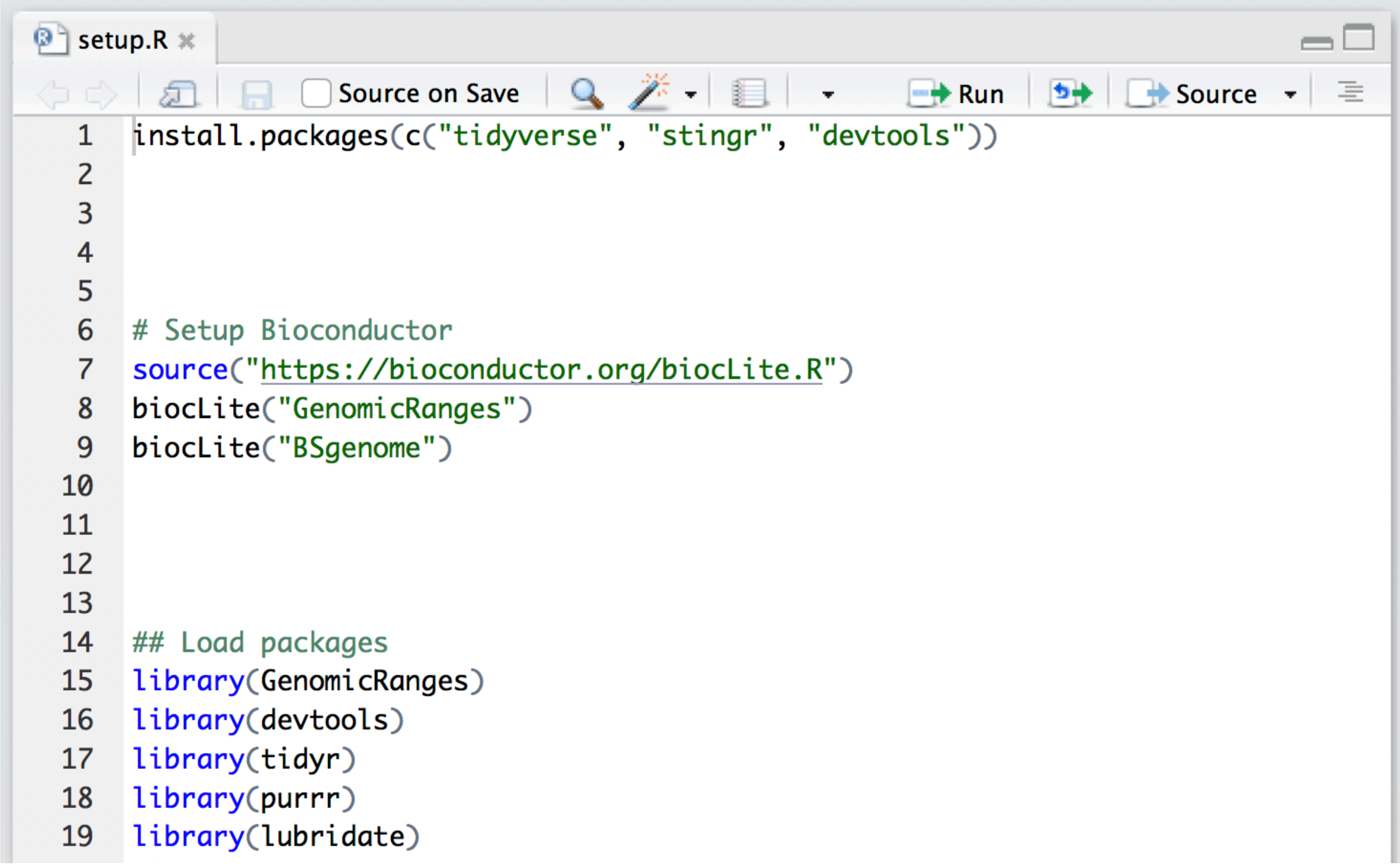
Escriba 'q()' para salir de R.

> installed.packages()
                                  Package
acepack                           "acepack"
ade4                              "ade4"
affy                              "affy"
affyio                            "affyio"
annotate                          "annotate"
AnnotationDbi                     "AnnotationDbi"
AnnotationHub                     "AnnotationHub"
ape                               "ape"
assertthat                        "assertthat"
backports                         "backports"
base                              "base"
base64enc                         "base64enc"
BH                                "BH"
bindr                             "bindr"
bindrcpp                          "bindrcpp"
Biobase                           "Biobase"
BiocGenerics                      "BiocGenerics"
BiocInstaller                     "BiocInstaller"
BiocParallel                      "BiocParallel"
biomaRt                           "biomaRt"
Biostrings                        "Biostrings"
biovizBase                        "biovizBase"
bit                               "bit"
bit64                             "bit64"
bitops                            "bitops"
blob                              "blob"
```

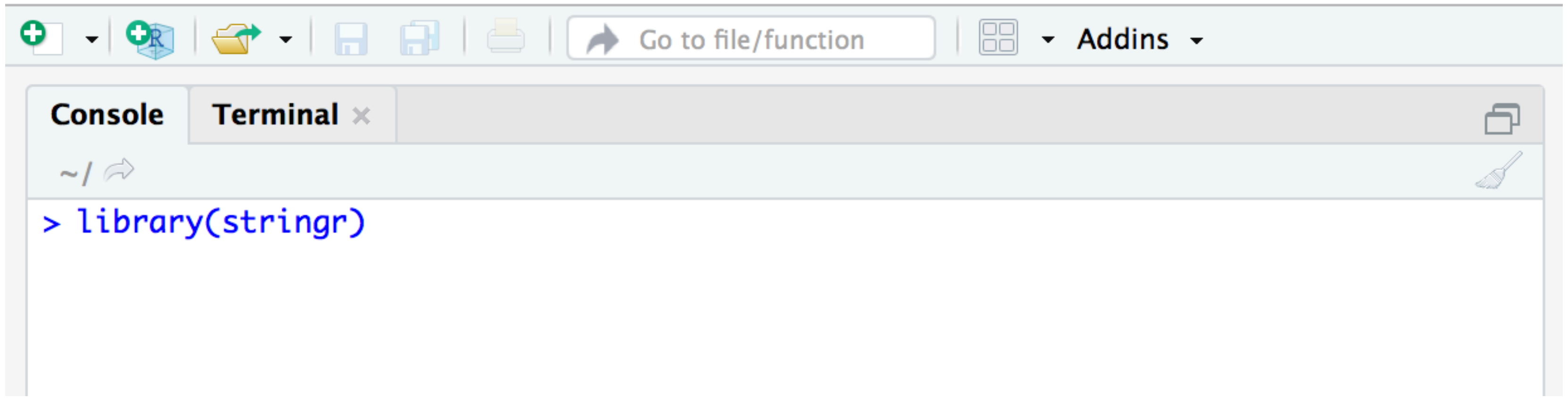
INSTALACIÓN DE PAQUETES R



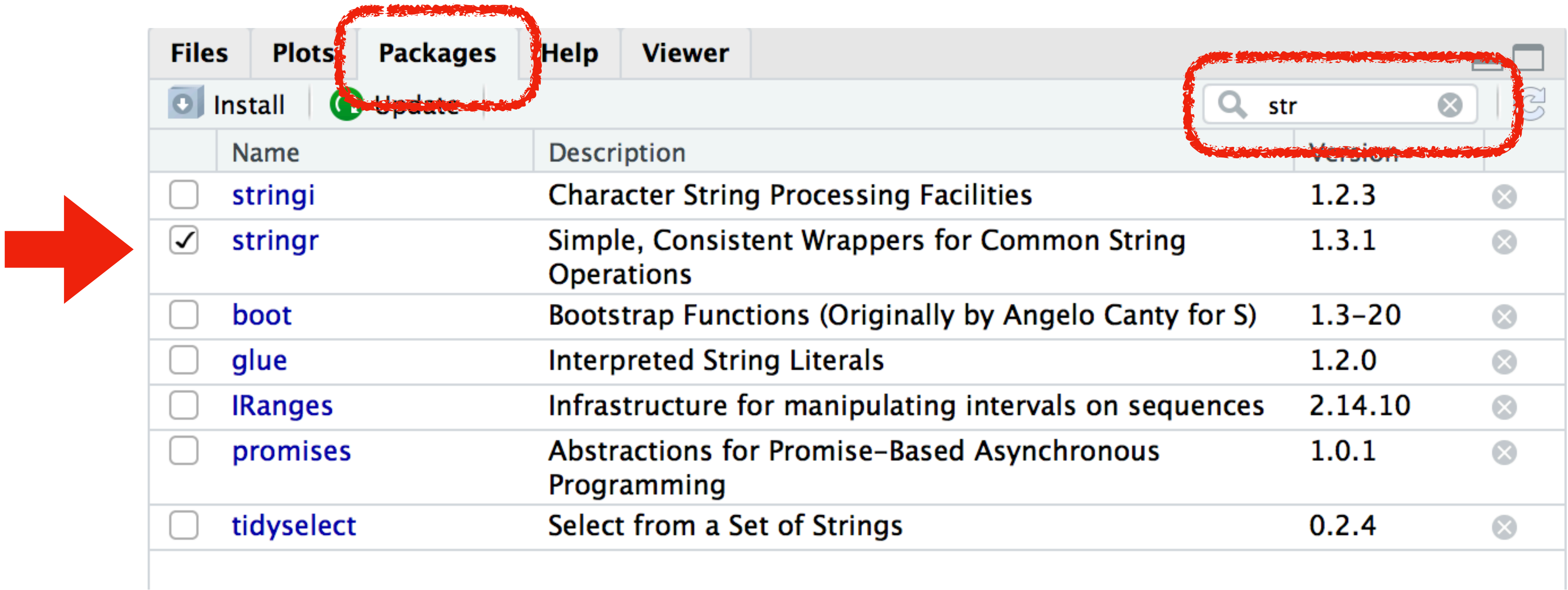
```r
install.packages(c("tidyverse", "stingr", "devtools"))




# Setup Bioconductor
source("https://bioconductor.org/biocLite.R")
biocLite("GenomicRanges")
biocLite("BSgenome")




## Load packages
library(GenomicRanges)
library(devtools)
library(tidyr)
library(purrr)
library(lubridate)
```

INSTALACIÓN DE PAQUETES R

- **library ( )** , función para cargar en **R** los paquetes instalados

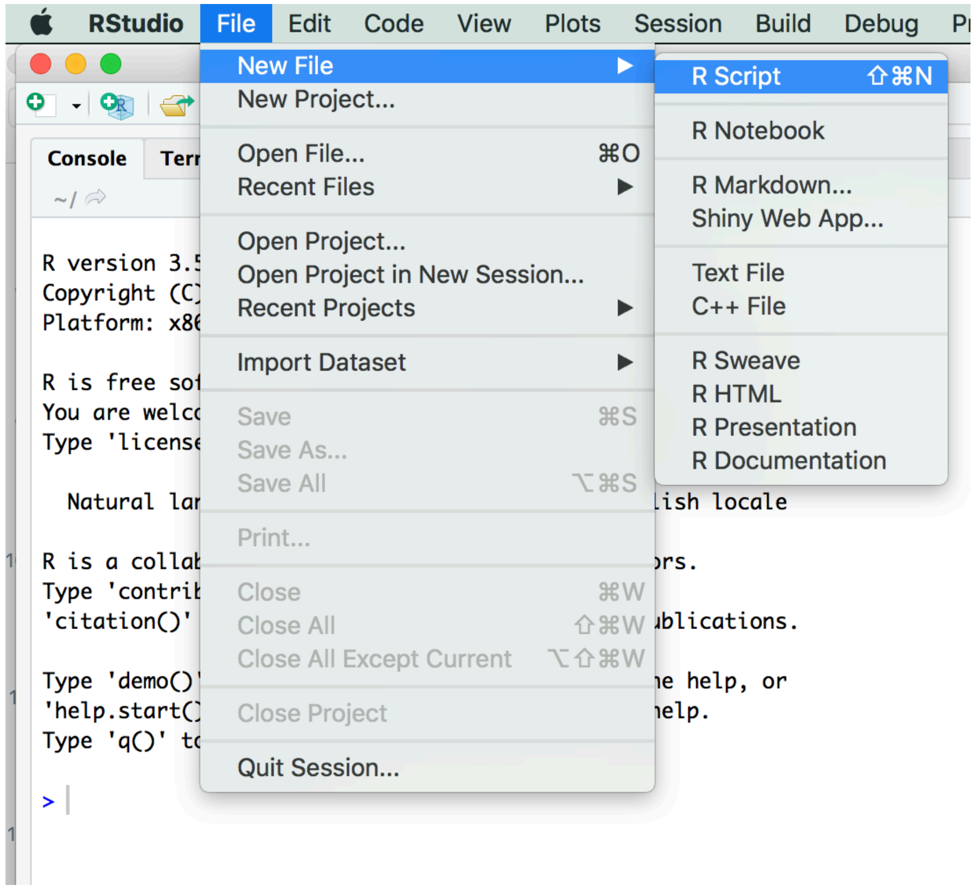


```
> library(stringr)
```



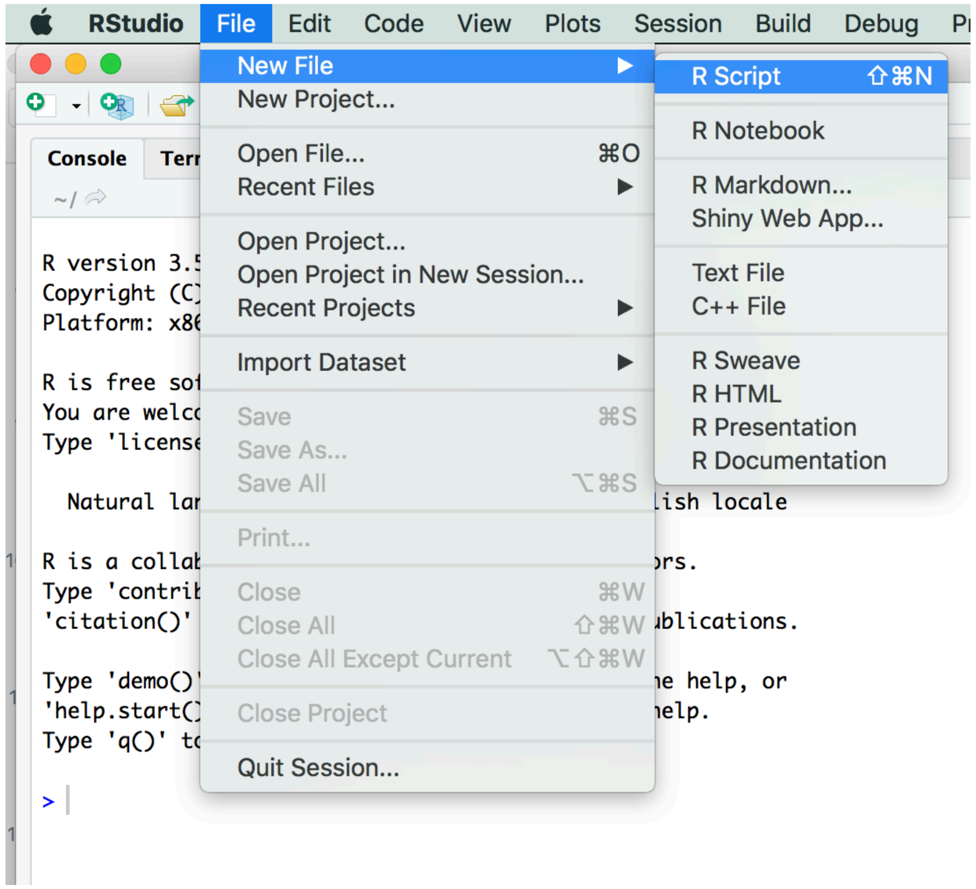
	Name	Description	Version	
☐	stringi	Character String Processing Facilities	1.2.3	⊗
☑	stringr	Simple, Consistent Wrappers for Common String Operations	1.3.1	⊗
☐	boot	Bootstrap Functions (Originally by Angelo Canty for S)	1.3-20	⊗
☐	glue	Interpreted String Literals	1.2.0	⊗
☐	IRanges	Infrastructure for manipulating intervals on sequences	2.14.10	⊗
☐	promises	Abstractions for Promise-Based Asynchronous Programming	1.0.1	⊗
☐	tidyselect	Select from a Set of Strings	0.2.4	⊗

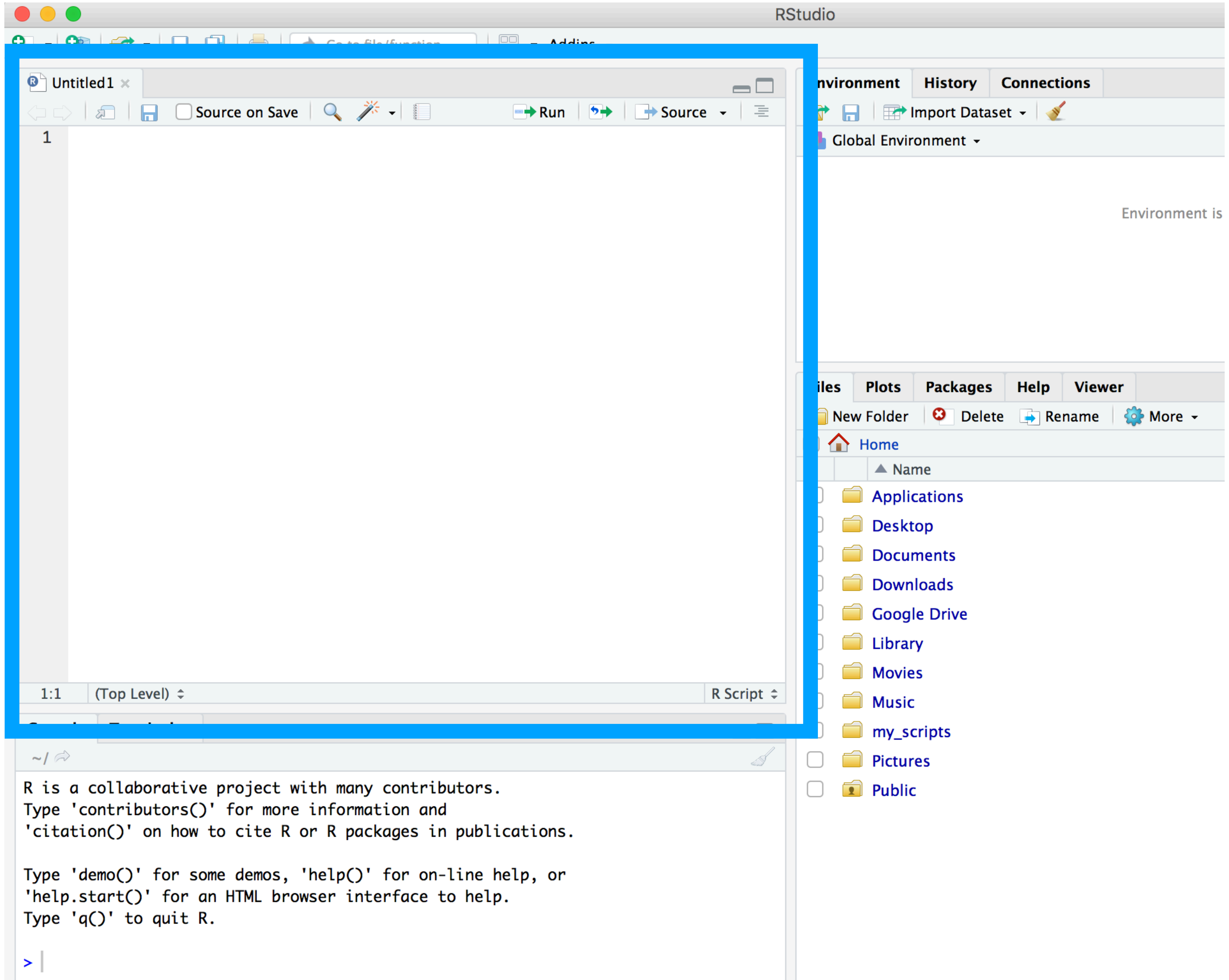
USANDO RSTUDIO POR PRIMERA VEZ



```
R version 3.5
Copyright (C
Platform: x86

R is free sof
You are welco
Type 'license

  Natural lan                                   lish locale

R is a collab                                   ors.
Type 'contrib
'citation()'                                    ublications.

Type 'demo()'                                   ne help, or
'help.start()                                   help.
Type 'q()' to

> 
```

USANDO RSTUDIO POR PRIMERA VEZ





```
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.

>
```

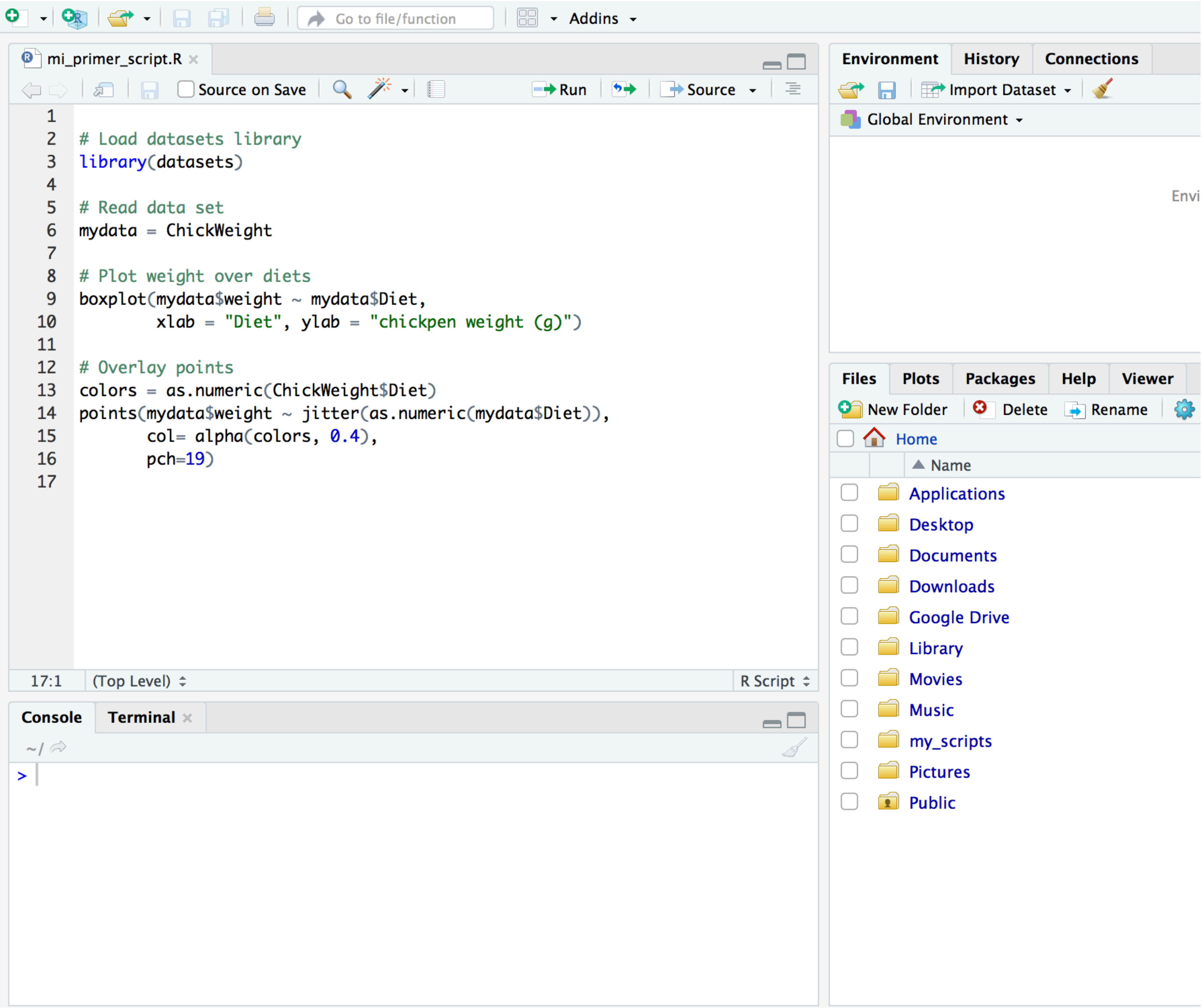
Windows

control-shift-N

Mac

commando-shift-N

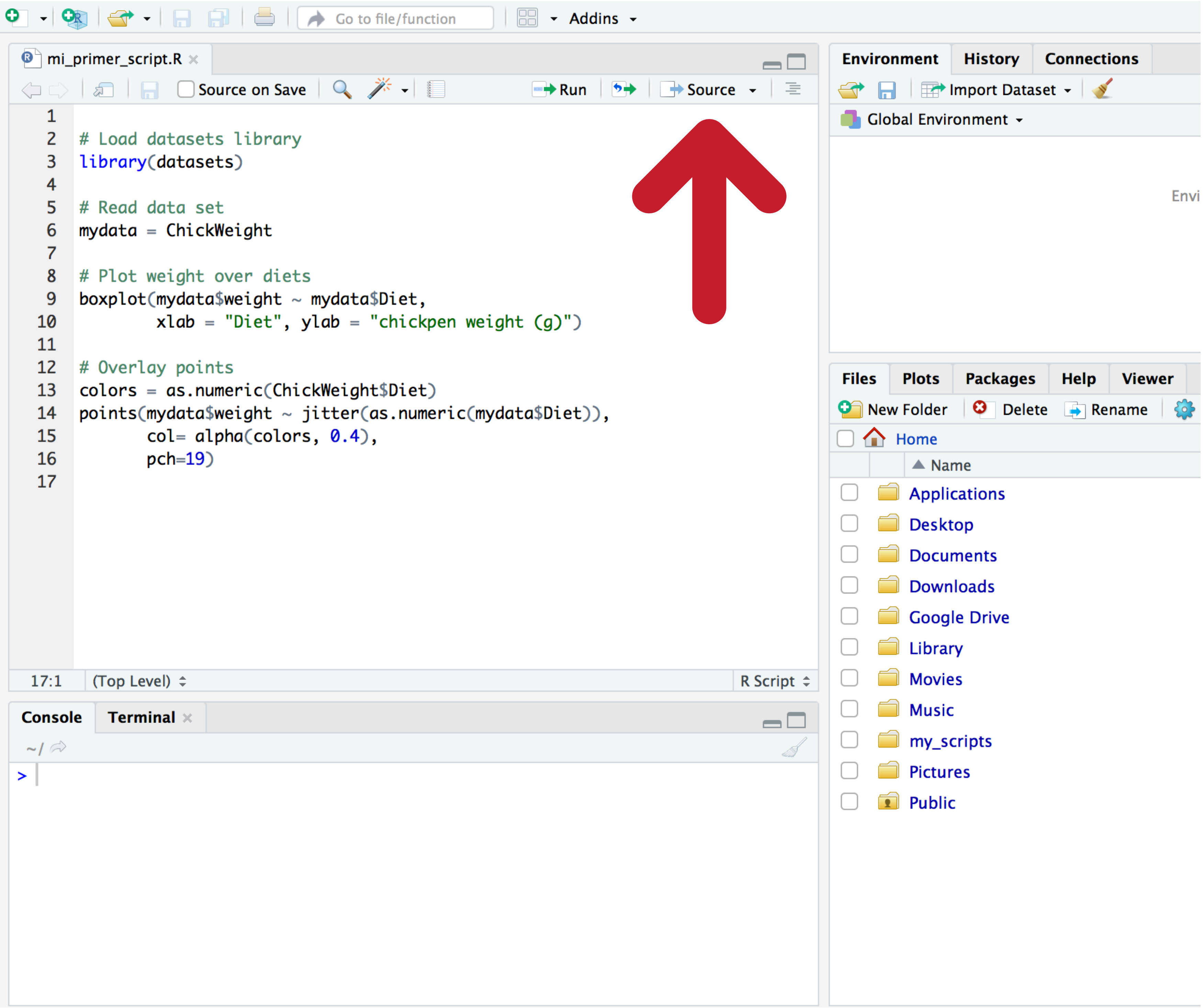
CORRIENDO SCRIPTS



```

# Load datasets library
library(datasets)

# Read data set
mydata = ChickWeight

# Plot weight over diets
boxplot(mydata$weight ~ mydata$Diet,
        xlab = "Diet", ylab = "chickpen weight (g)")

# Overlay points
colors = as.numeric(ChickWeight$Diet)
points(mydata$weight ~ jitter(as.numeric(mydata$Diet)),
       col= alpha(colors, 0.4),
       pch=19)

```

```
>
```

CORRIENDO SCRIPTS



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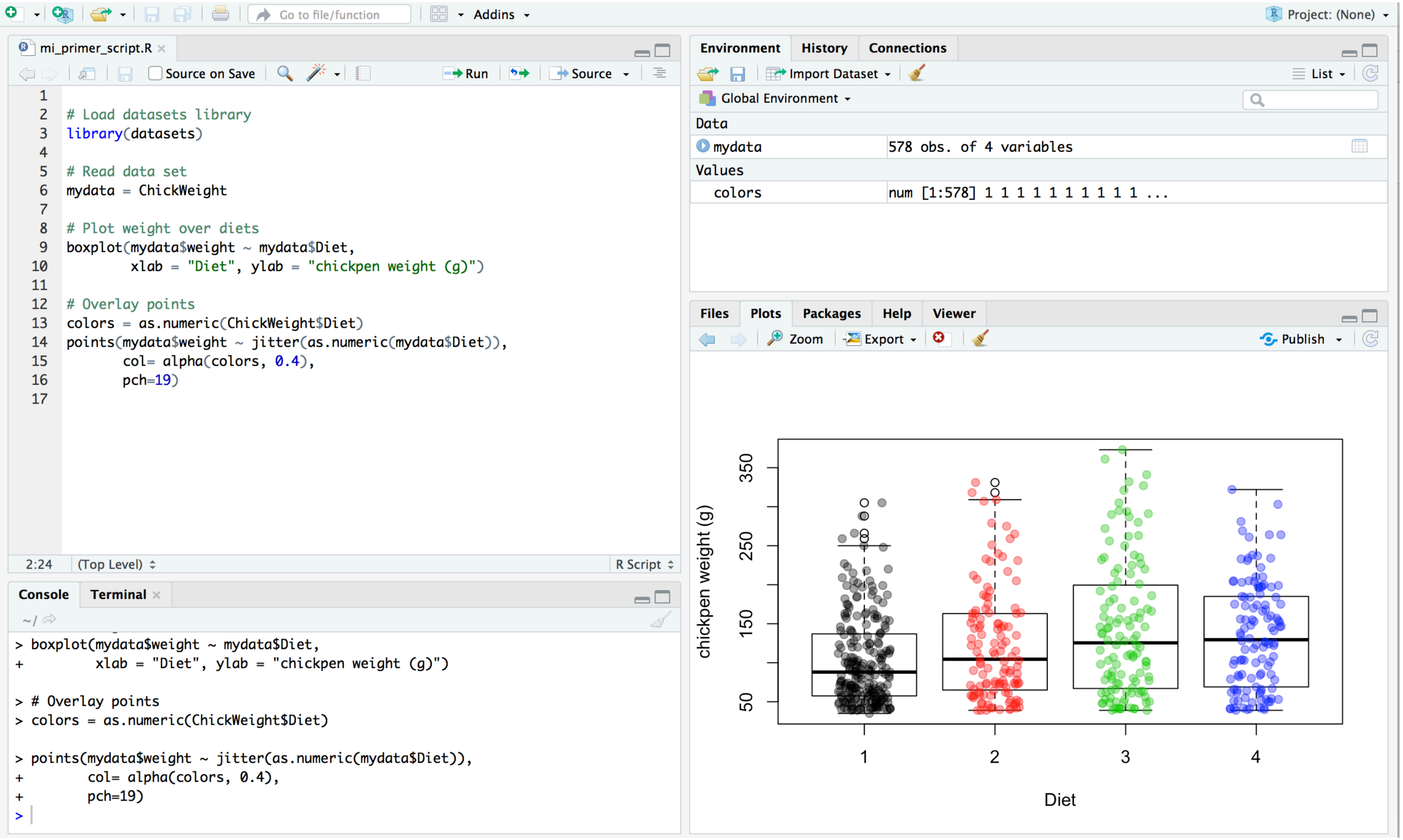
Windows

control-shift-enter

Mac

commando-shift-return

CORRIENDO SCRIPTS



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+        col= alpha(colors, 0.4),
+        pch=19)
>
```

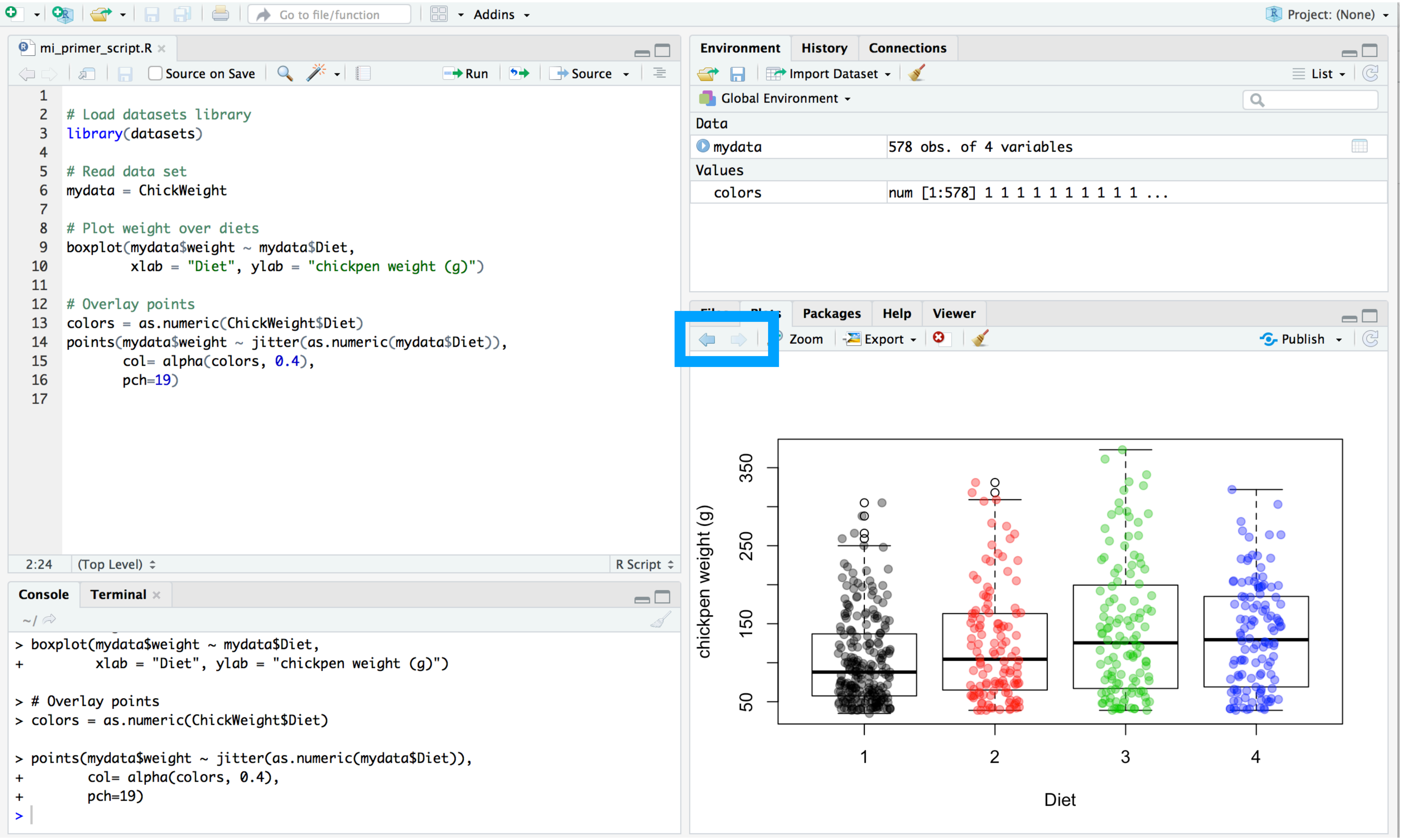
Data

mydata	578 obs. of 4 variables

Values

colors	num [1:578] 1 1 1 1 1 1 1 1 1 1 ...

CORRIENDO SCRIPTS



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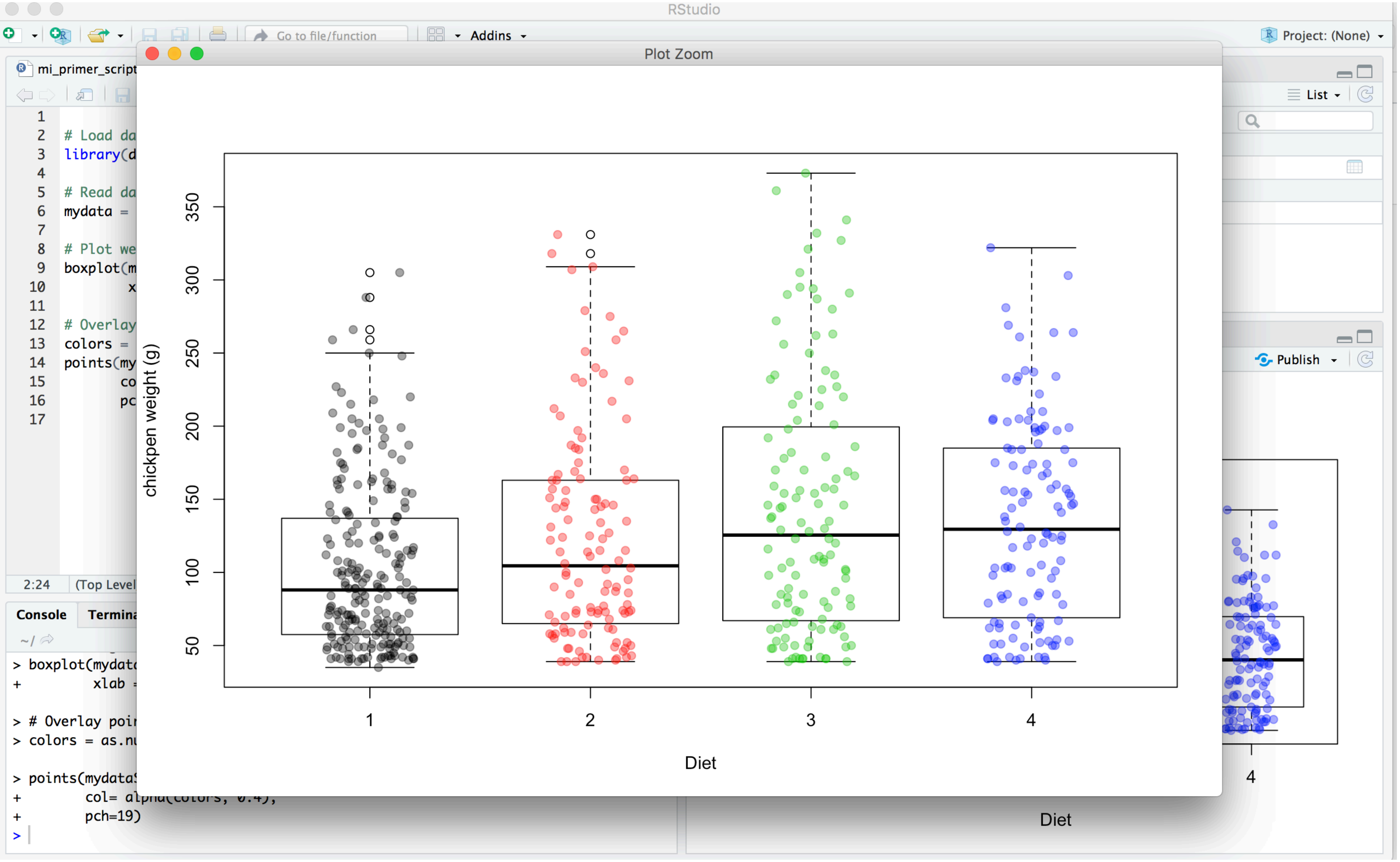
CORRIENDO SCRIPTS



```
# Load da
library(d

# Read da
mydata =

# Plot we
boxplot(m
        x

# Overlay
colors =
points(my
       co
       pc
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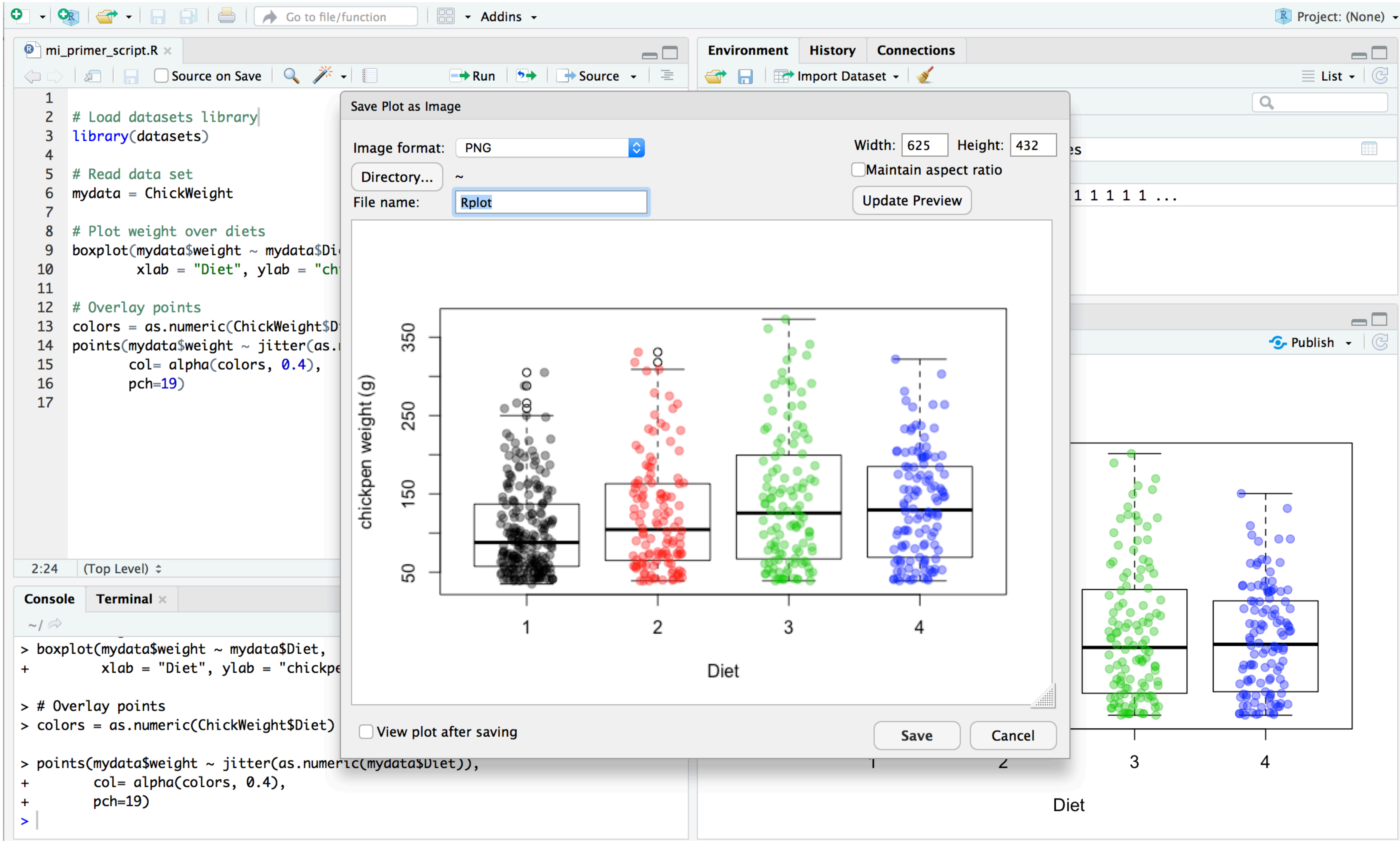
```
> boxplot(mydat
+           xlab =

> # Overlay poi
> colors = as.nu

> points(mydata$
+         col= alpha(colors, 0.4),
+         pch=19)
>
```

CORRIENDO SCRIPTS



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> points(mydata$weight ~ jitter(as.numeric(mydata$Diet)),
+         col= alpha(colors, 0.4),
+         pch=19)
> 
```

Save Plot as Image

Image format: PNG

Directory... ~

File name: Rplot

Width: 625 Height: 432

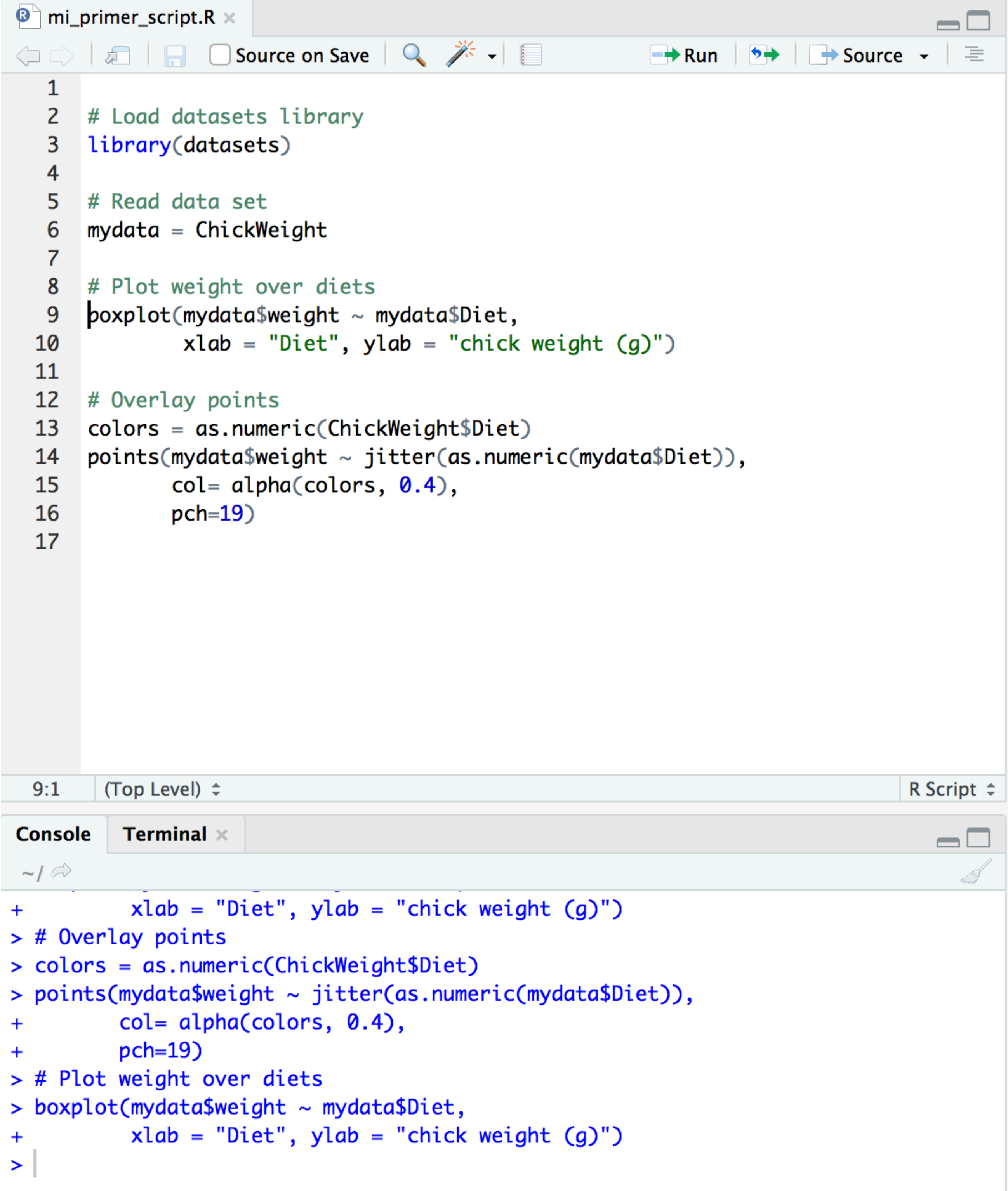
☐ Maintain aspect ratio

Update Preview

☐ View plot after saving

Save Cancel

CORRIENDO SCRIPTS



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> boxplot(mydata$weight ~ mydata$Diet,
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> |
```

Windows

control-enter

Mac

commando-return

RESUMEN

- **install.packages ( )** , función para instalar paquetes en **R**
- **library ( )** , función para cargar en **R** los paquetes instalados
- **installed.packages ( )** , función para mostrar todos los paquetes que hemos instalado