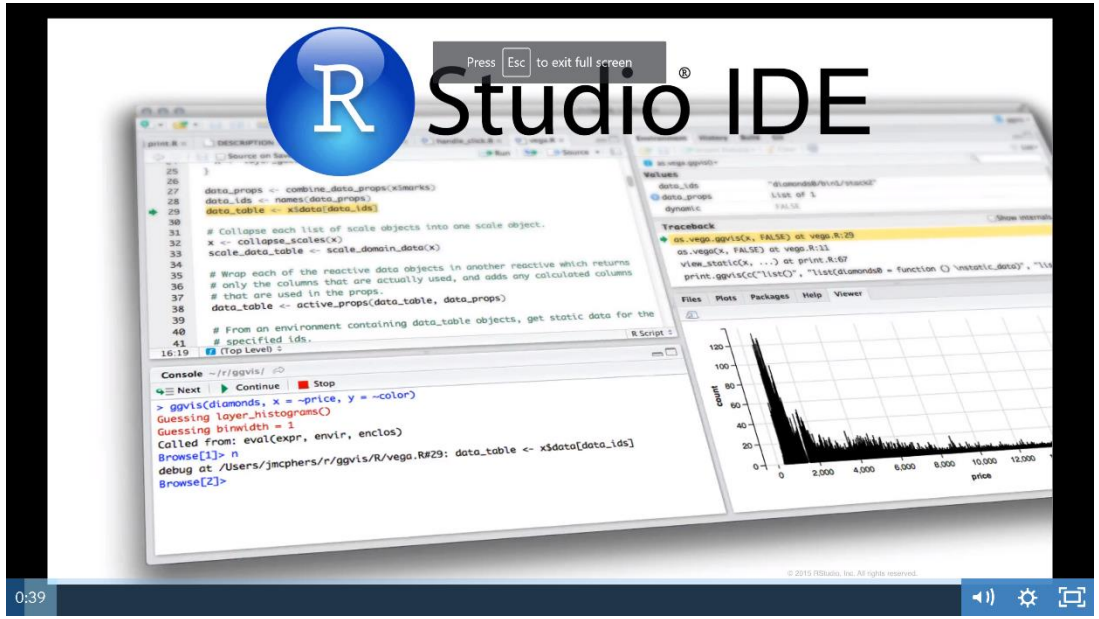
What is the difference between **R** and **Rstudio IDE?**



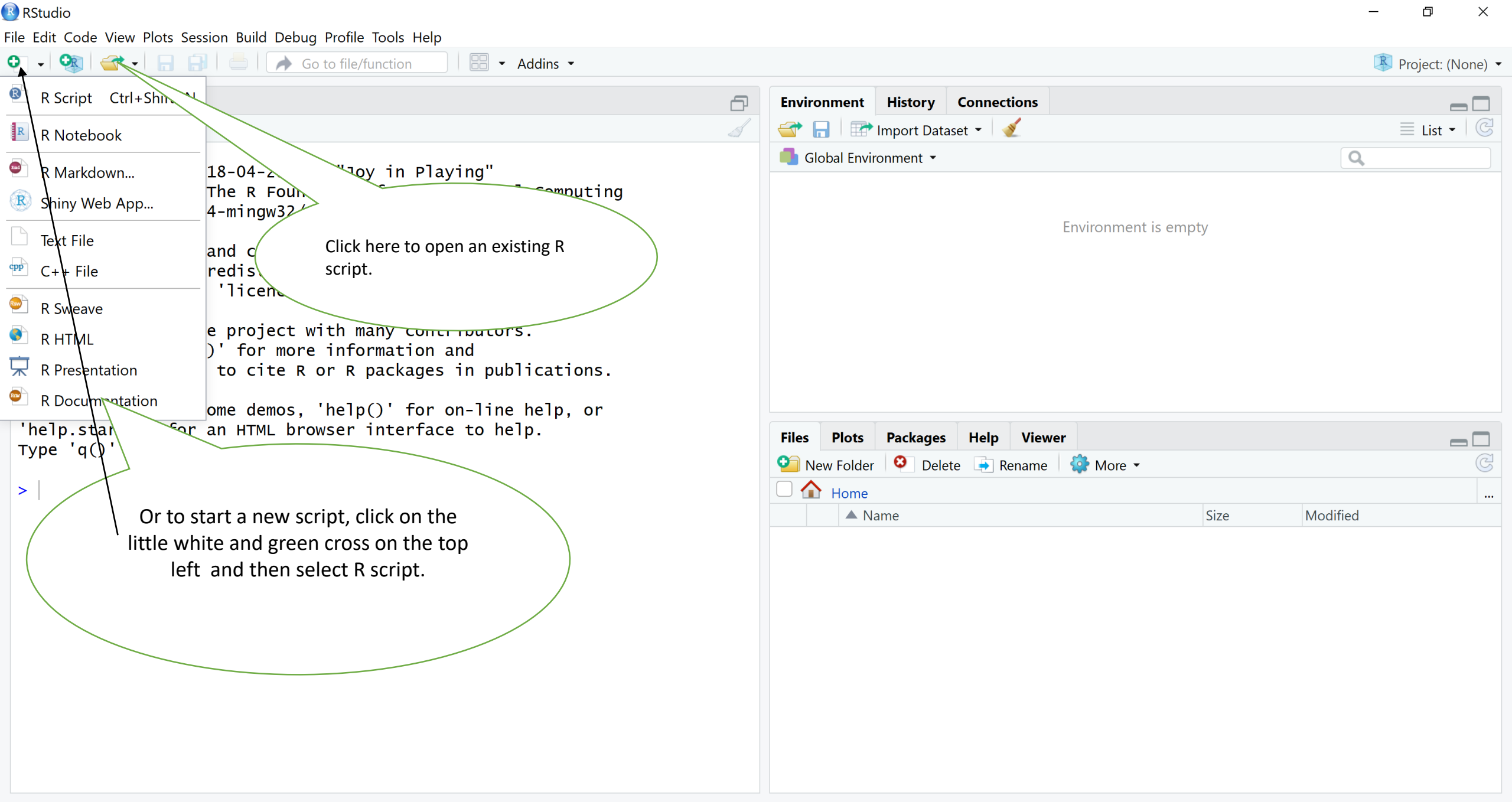
R is a computer language,
which you have already learned how to use.

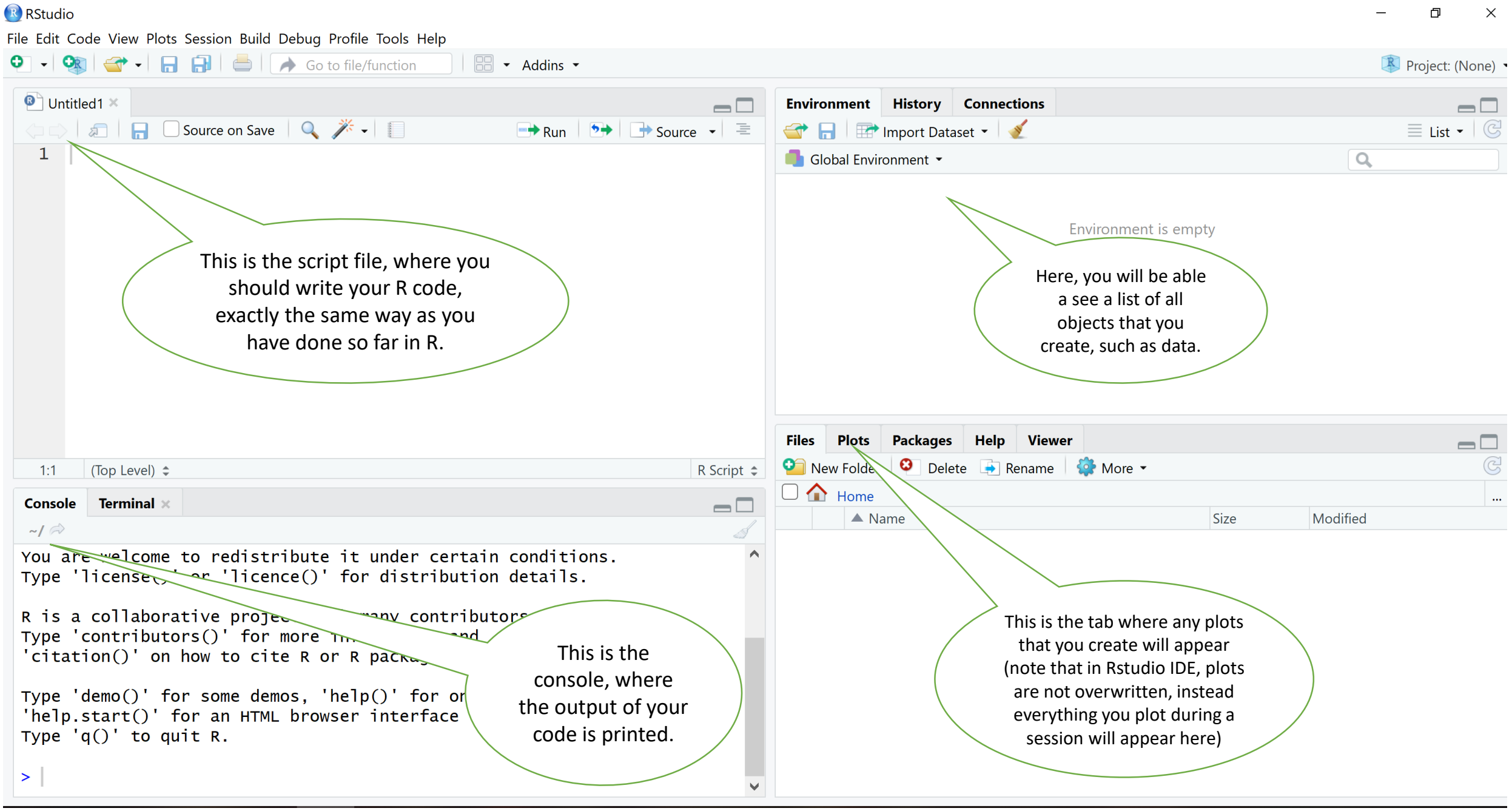
R studio IDE is essentially an editor for R,
which can help you use R more efficiently.

Getting started

Creating a new script, opening an existing script, understanding editor layout

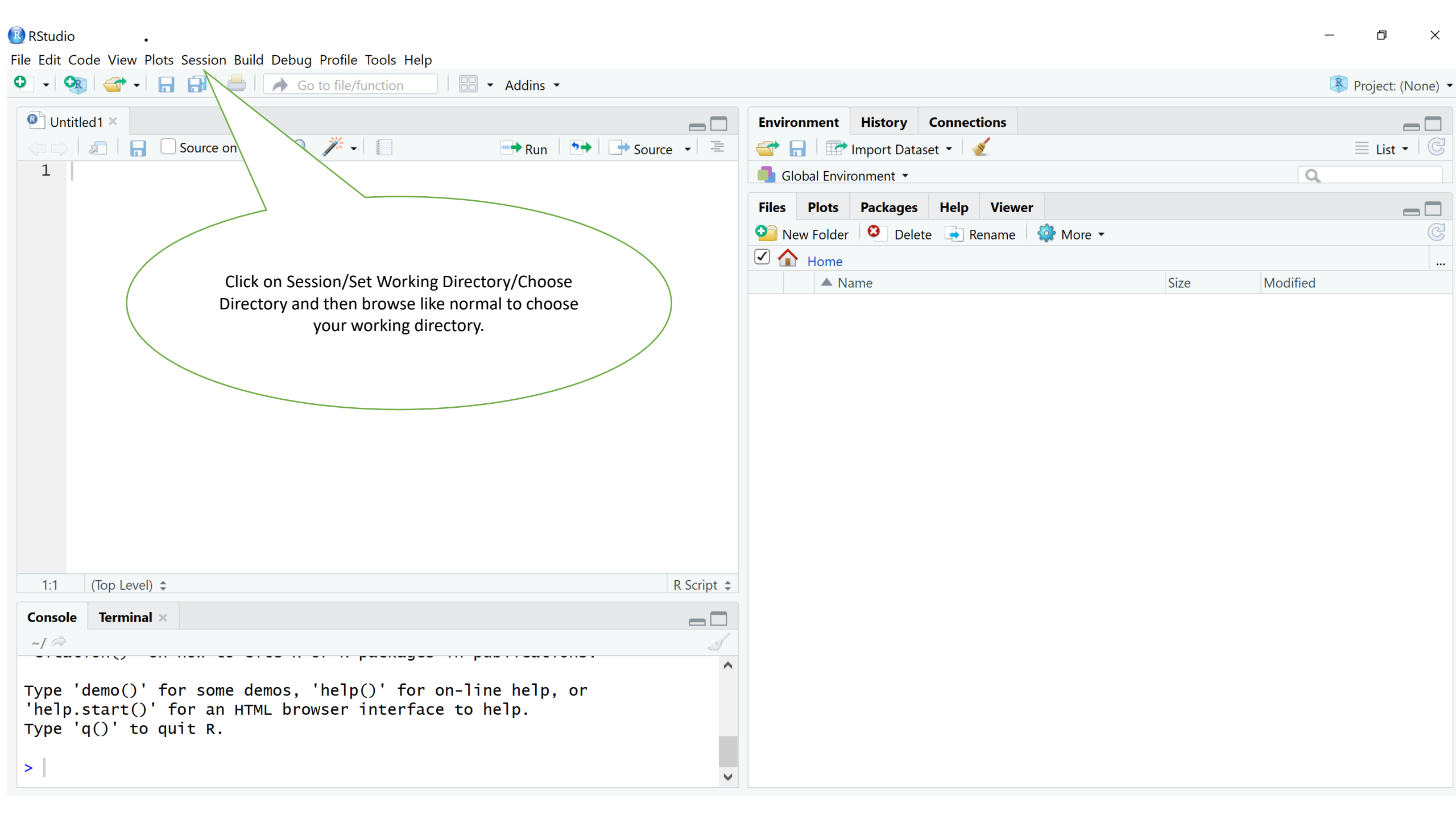
When you first open up **Rstudio IDE**, it looks like this.

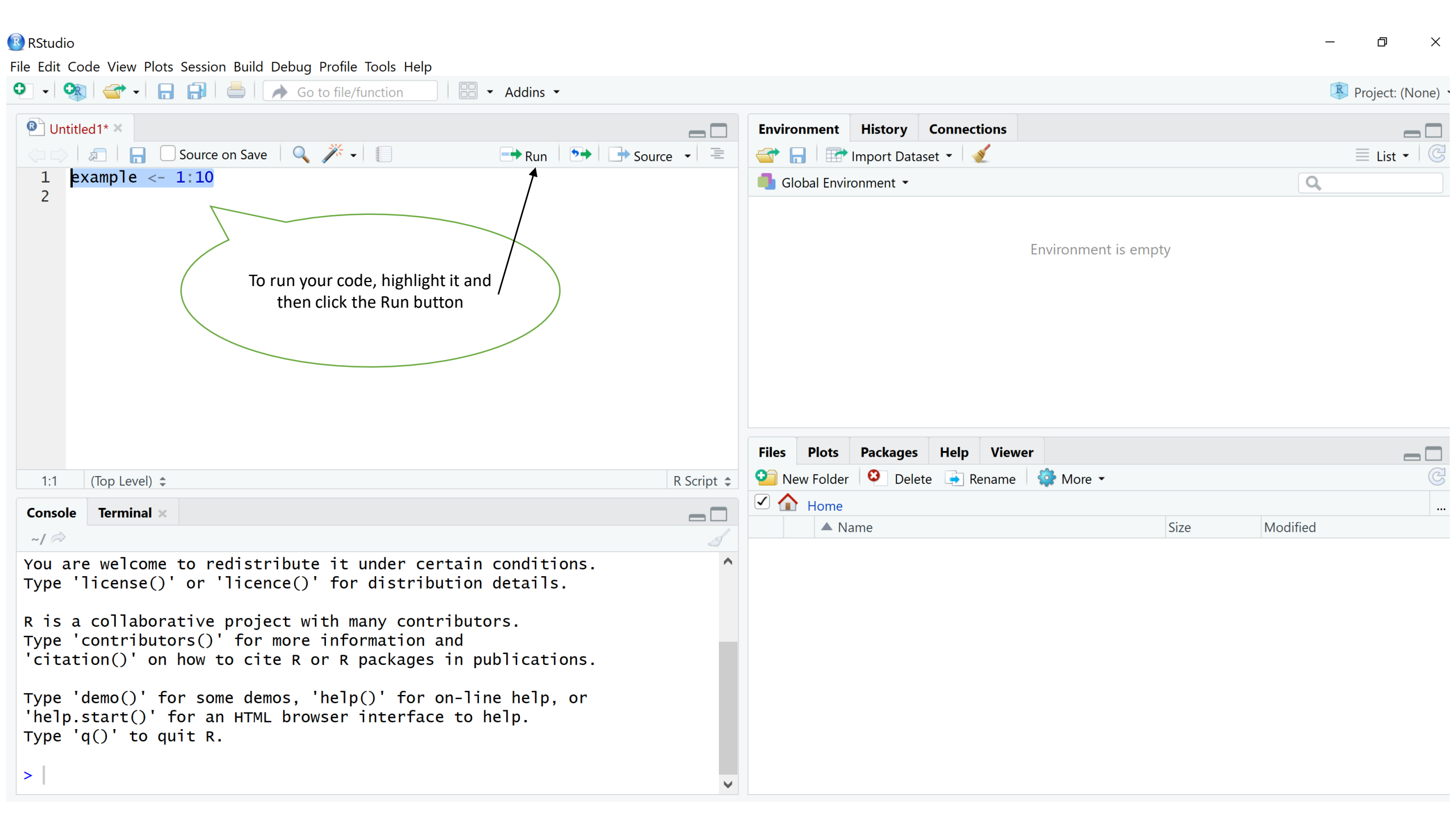



RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
Untitled1
Source on Save
Run
Source
1
This is the script file, where you should write your R code, exactly the same way as you have done so far in R.
1:1
(Top Level)
R Script
Environment
History
Connections
Import Dataset
List
Global Environment
Environment is empty
Here, you will be able a see a list of all objects that you create, such as data.
Console
Terminal
~/
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
R is a collaborative proje many contributors
Type 'contributors()' for more in and
'citation()' on how to cite R or R packa
Type 'demo()' for some demos, 'help()' for or
'help.start()' for an HTML browser interface
Type 'q()' to quit R.
>
This is the console, where the output of your code is printed.
Files
Plots
Packages
Help
Viewer
New Folde
Delete
Rename
More
Home
Name
Size
Modified
This is the tab where any plots that you create will appear (note that in Rstudio IDE, plots are not overwritten, instead everything you plot during a session will appear here)

The basics

Setting your working directory, running code, saving the R script, viewing data


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
Untitled1
Source on
Run
Source
1
Click on Session/Set Working Directory/Choose Directory and then browse like normal to choose your working directory.
1:1
(Top Level)
R Script
Console
Terminal
~/
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.
>
Environment
History
Connections
Import Dataset
List
Global Environment
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
Untitled1*
Source on Save
Run
Source
1 example <- 1:10
2
To run your code, highlight it and
then click the Run button
1:1
(Top Level)
R Script
Console
Terminal
~/
You are welcome to redistribute it under certain conditions.
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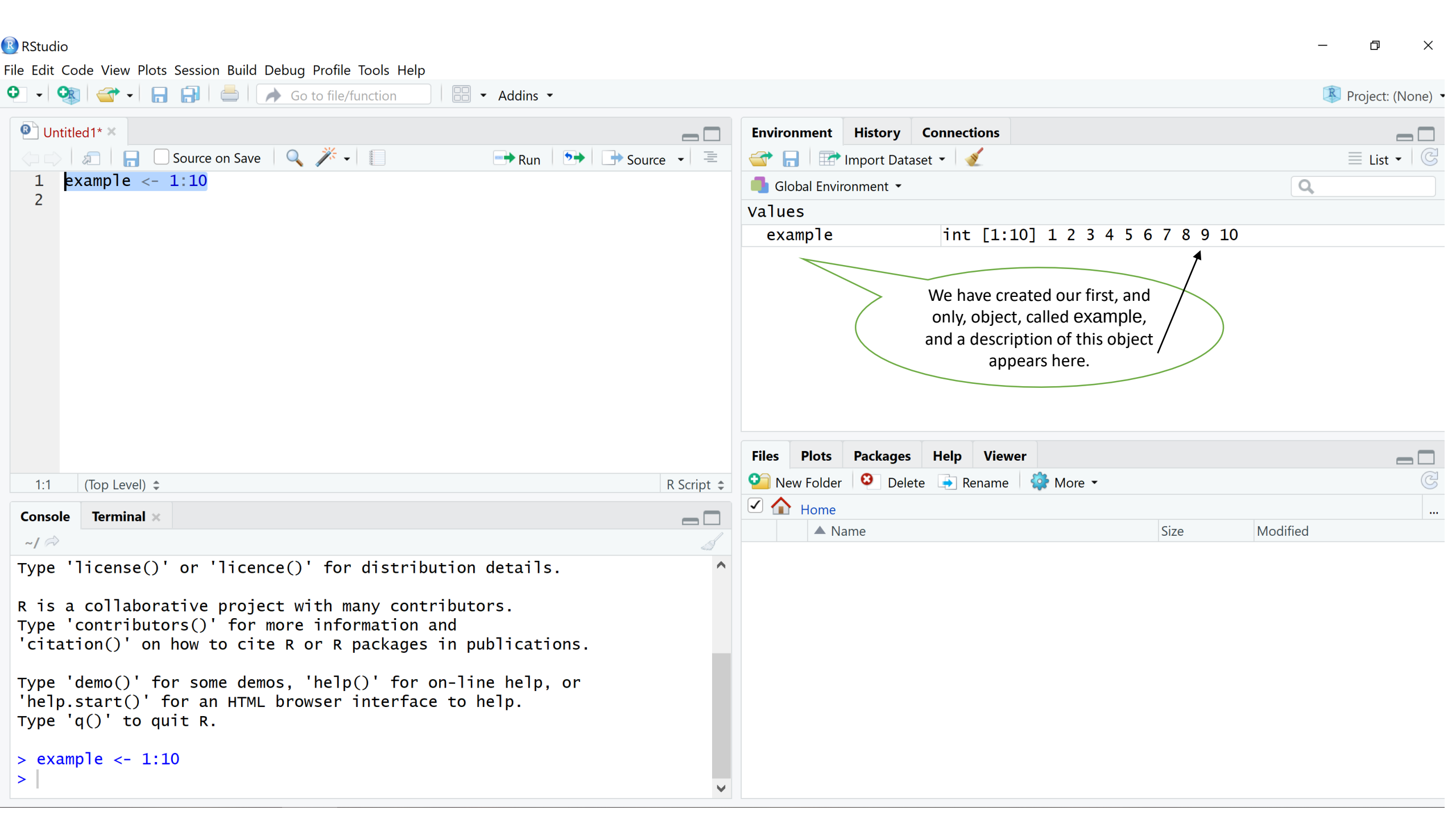
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
>
Environment
History
Connections
Import Dataset
List
Global Environment
Environment is empty
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
Untitled1*
Source on Save
Run
Source
1 example <- 1:10
2
1:1
(Top Level)
R Script
Console
Terminal
~/
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R is a collaborative project with many contributors.
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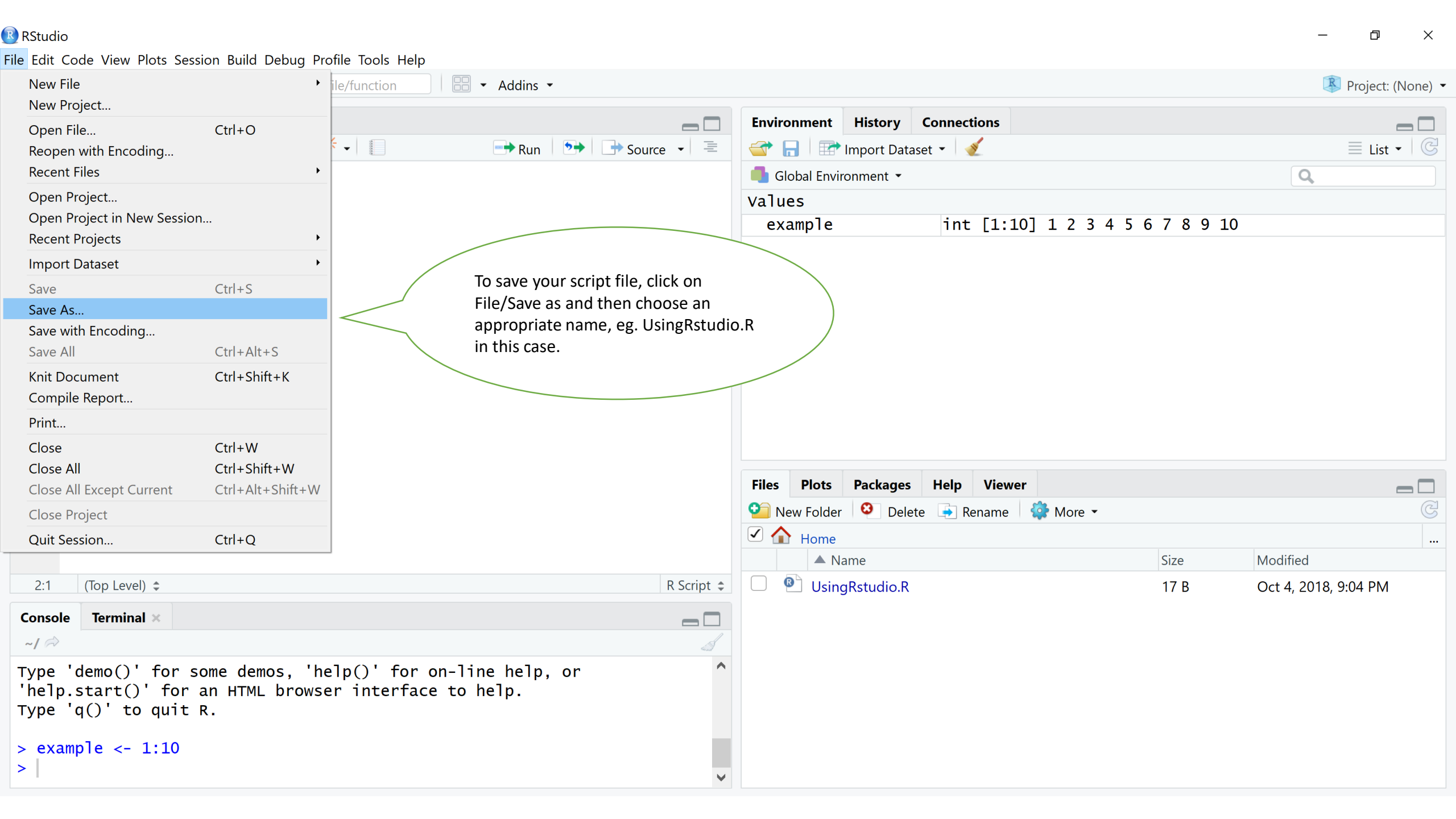
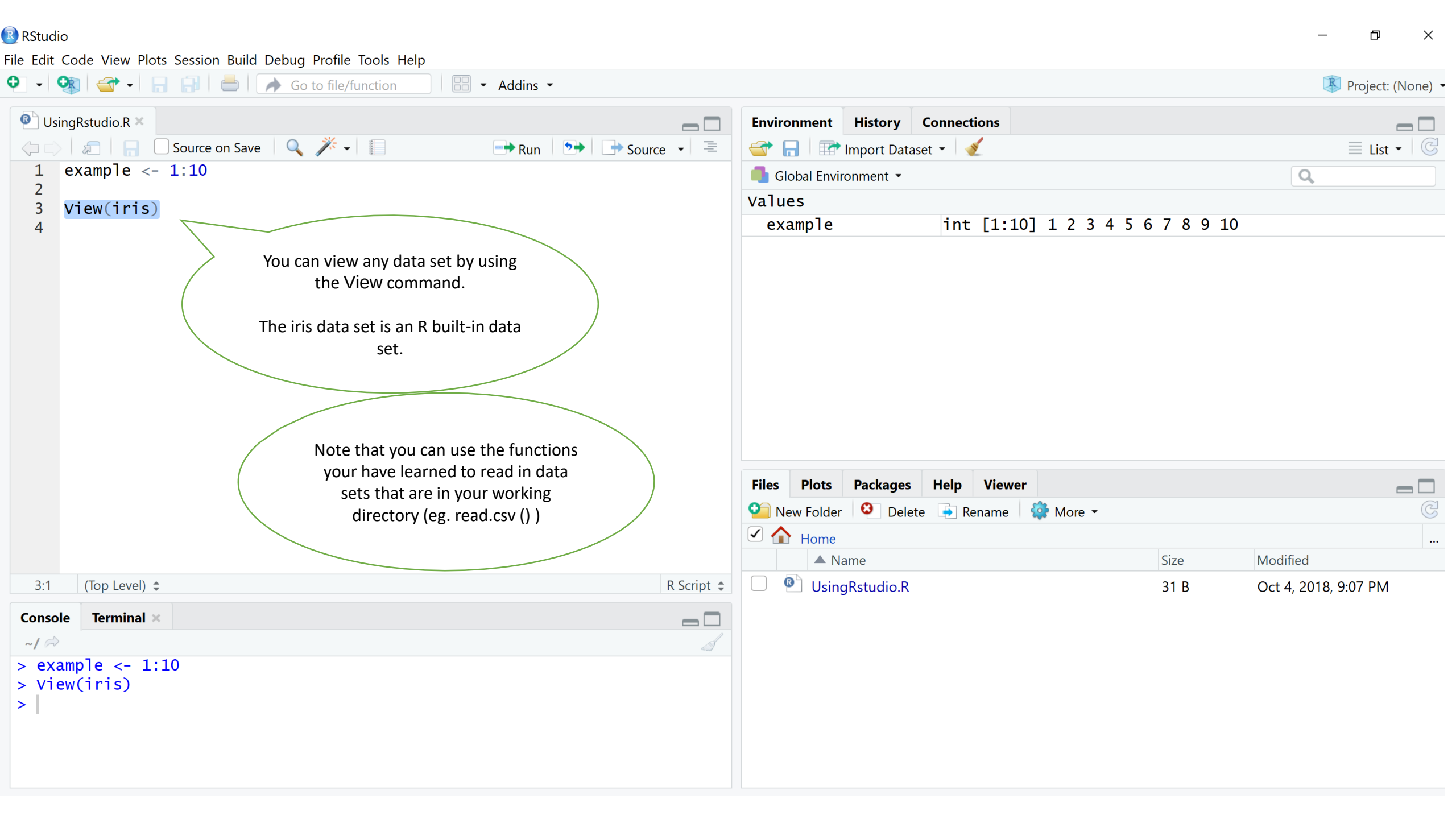
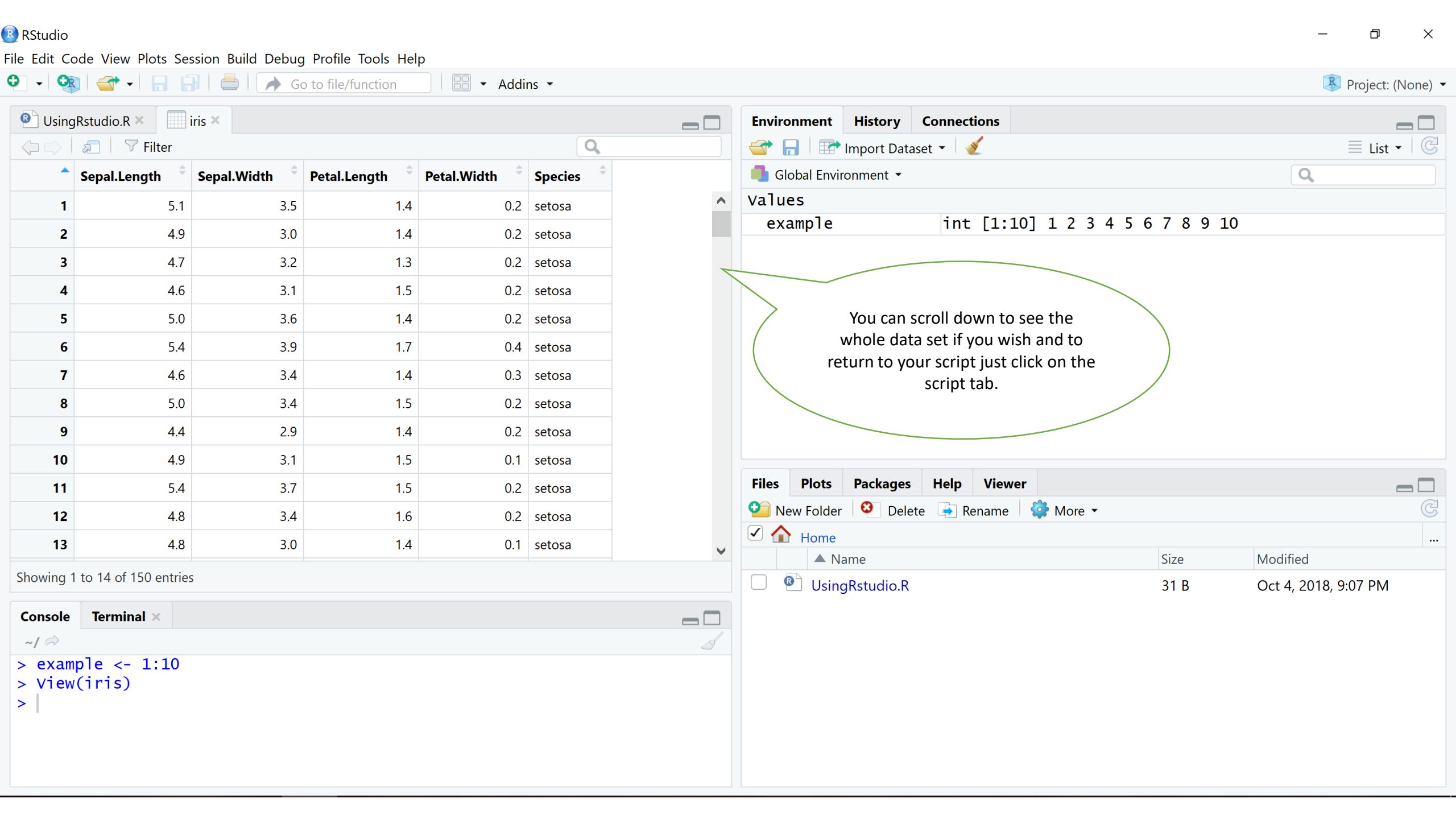
'citation()' on how to cite R or R packages in publications.
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
> example <- 1:10
>
Environment
History
Connections
Import Dataset
List
Global Environment
Values
example
int [1:10] 1 2 3 4 5 6 7 8 9 10
We have created our first, and only, object, called example, and a description of this object appears here.
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified

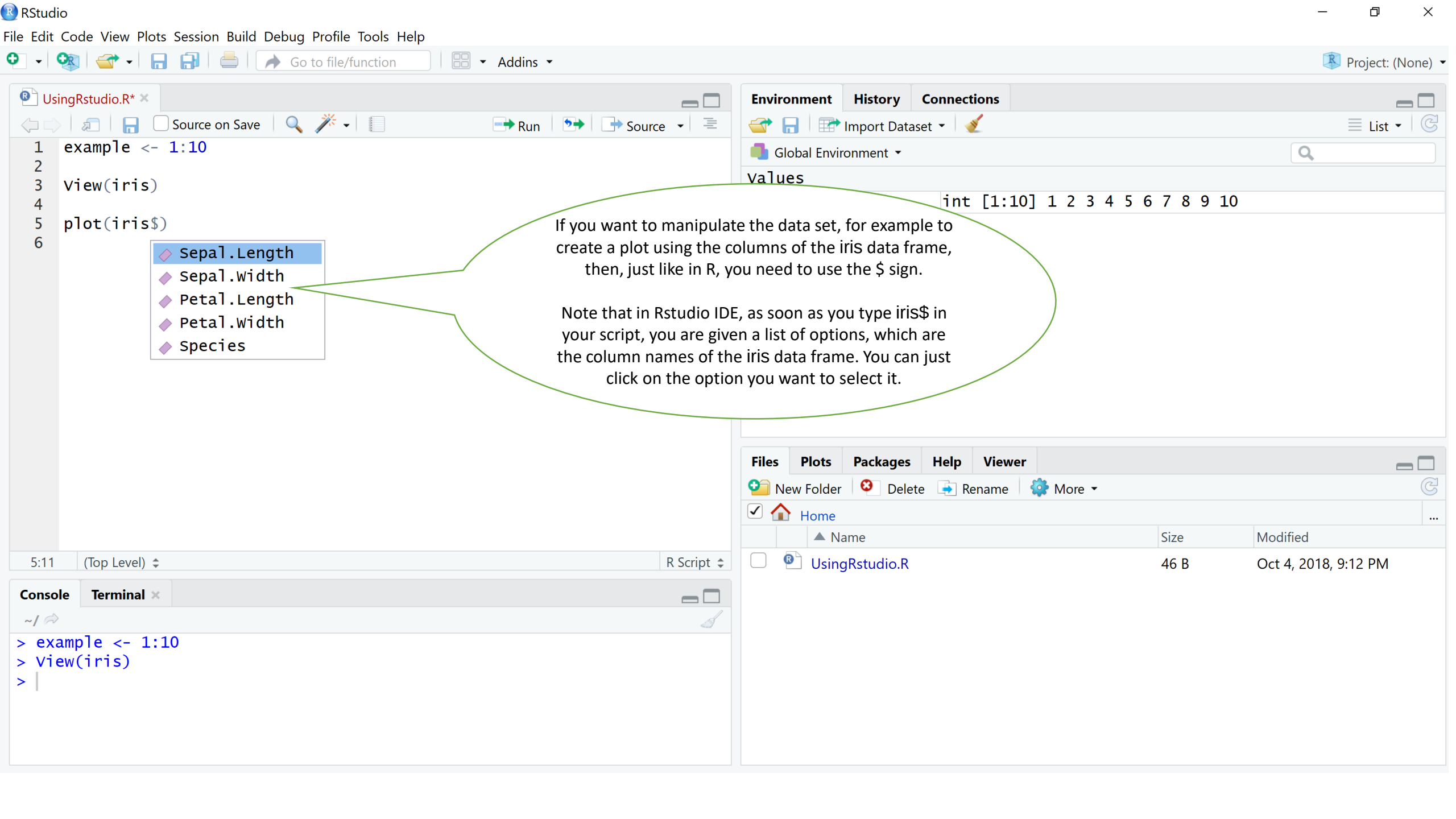

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
New File
New Project...
Open File... Ctrl+O
Reopen with Encoding...
Recent Files
Open Project...
Open Project in New Session...
Recent Projects
Import Dataset
Save Ctrl+S
Save As...
Save with Encoding...
Save All Ctrl+Alt+S
Knit Document Ctrl+Shift+K
Compile Report...
Print...
Close Ctrl+W
Close All Ctrl+Shift+W
Close All Except Current Ctrl+Alt+Shift+W
Close Project
Quit Session... Ctrl+Q
Addins
Project: (None)
Run
Source
To save your script file, click on File/Save as and then choose an appropriate name, eg. UsingRstudio.R in this case.
Environment History Connections
Import Dataset
List
Global Environment
Values
example int [1:10] 1 2 3 4 5 6 7 8 9 10
Files Plots Packages Help Viewer
New Folder Delete Rename More
Home
Name Size Modified
UsingRstudio.R 17 B Oct 4, 2018, 9:04 PM
2:1 (Top Level) R Script
Console Terminal
~/
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.
> example <- 1:10
>


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
UsingRstudio.R
Source on Save
Run
Source
1 example <- 1:10
2
3 View(iris)
4
You can view any data set by using the View command.
The iris data set is an R built-in data set.
Note that you can use the functions your have learned to read in data sets that are in your working directory (eg. read.csv ())
3:1
(Top Level)
R Script
Console
Terminal
~/
> example <- 1:10
> View(iris)
>
Environment
History
Connections
Import Dataset
List
Global Environment
Values
example
int [1:10] 1 2 3 4 5 6 7 8 9 10
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified
UsingRstudio.R
31 B
Oct 4, 2018, 9:07 PM


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
UsingRstudio.R
iris
Filter
Sepal.Length Sepal.Width Petal.Length Petal.Width Species
1 5.1 3.5 1.4 0.2 setosa
2 4.9 3.0 1.4 0.2 setosa
3 4.7 3.2 1.3 0.2 setosa
4 4.6 3.1 1.5 0.2 setosa
5 5.0 3.6 1.4 0.2 setosa
6 5.4 3.9 1.7 0.4 setosa
7 4.6 3.4 1.4 0.3 setosa
8 5.0 3.4 1.5 0.2 setosa
9 4.4 2.9 1.4 0.2 setosa
10 4.9 3.1 1.5 0.1 setosa
11 5.4 3.7 1.5 0.2 setosa
12 4.8 3.4 1.6 0.2 setosa
13 4.8 3.0 1.4 0.1 setosa
Showing 1 to 14 of 150 entries
Console
Terminal
~/
> example <- 1:10
> View(iris)
>
Environment
History
Connections
Import Dataset
List
Global Environment
Values
example int [1:10] 1 2 3 4 5 6 7 8 9 10
You can scroll down to see the whole data set if you wish and to return to your script just click on the script tab.
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified
UsingRstudio.R
31 B
Oct 4, 2018, 9:07 PM

Plots

Creating plots, saving them as pdf files


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
UsingRstudio.R*
Source on Save
Run
Source
1 example <- 1:10
2
3 View(iris)
4
5 plot(iris$)
6
Sepal.Length
Sepal.Width
Petal.Length
Petal.Width
Species
If you want to manipulate the data set, for example to create a plot using the columns of the iris data frame, then, just like in R, you need to use the $ sign.
Note that in Rstudio IDE, as soon as you type iris$ in your script, you are given a list of options, which are the column names of the iris data frame. You can just click on the option you want to select it.
5:11
(Top Level)
R Script
Environment
History
Connections
Import Dataset
List
Global Environment
Values
int [1:10] 1 2 3 4 5 6 7 8 9 10
Files
Plots
Packages
Help
Viewer
New Folder
Delete
Rename
More
Home
Name
Size
Modified
UsingRstudio.R
46 B
Oct 4, 2018, 9:12 PM
Console
Terminal
~/
> example <- 1:10
> View(iris)
>

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function | Addins | Project: (None)

UsingRstudio.R | iris

Source on Save | Run | Source

```
1  example <- 1:10
2
3  View(iris)
4
5  plot(iris$Petal.Width, iris$Petal.Length)
6
```

Now we can create a scatterplot of petal width vs petal length from the data frame iris, which appears in the bottom right window.

If you create several plots, you can navigate through them by clicking on the arrows

5:1 (Top Level) R Script

Console | Terminal

```
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.

> example <- 1:10
> View(iris)
> plot(iris$Petal.Width, iris$Petal.Length)
>
```

Environment | History | Connections

Import Dataset | List

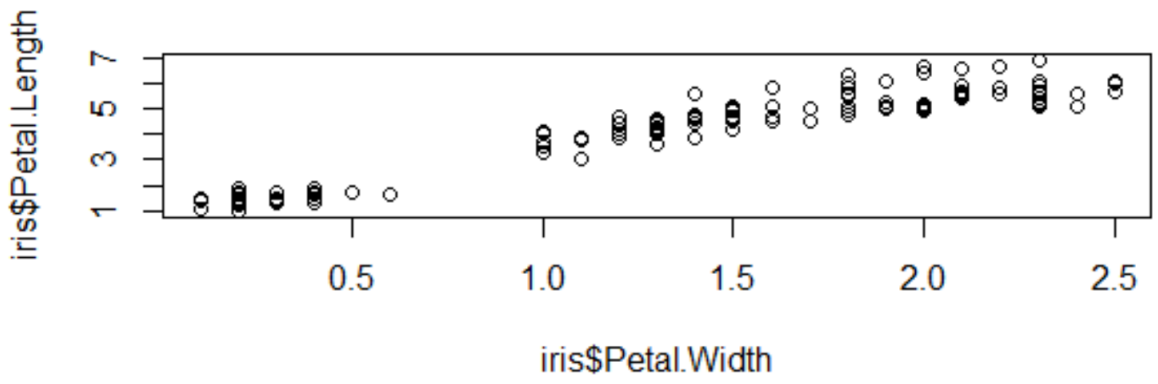
Global Environment

Values

example	int [1:10] 1 2 3 4 5 6 7 8 9 10

Files | Plots | Packages | Help | Viewer

Zoom | Export | Publish



RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function | Addins | Project: (None)

UsingRstudio.R | iris

Source on Save | Run | Source

```
1  example <- 1:10
2
3  View(iris)
4
5  plot(iris$Petal.Width, iris$Petal.Length)
6
```

5:1 (Top Level)

Console | Terminal

```
R is a collaborative project
Type 'contributors()' for mor
'citation()' on how to cite R

Type 'demo()' for some demos,
'help.start()' for an HTML br
Type 'q()' to quit R.

> example <- 1:10
> View(iris)
> plot(iris$Petal.Width, iris$Petal.Length)
>
```

Environment | History | Connections

Import Dataset | List

Global Environment

Values

example 1 2 3 4 5 6 7 8 9 10

Save Plot as PDF

PDF Size: US Letter 8.50 x 11.00 inches

Orientation: (•) Portrait ( ) Landscape

Options: [ ] Use cairo_pdf device

Directory... ~

File name: petal.pdf

[✓] View plot after saving

Preview | Save | Cancel

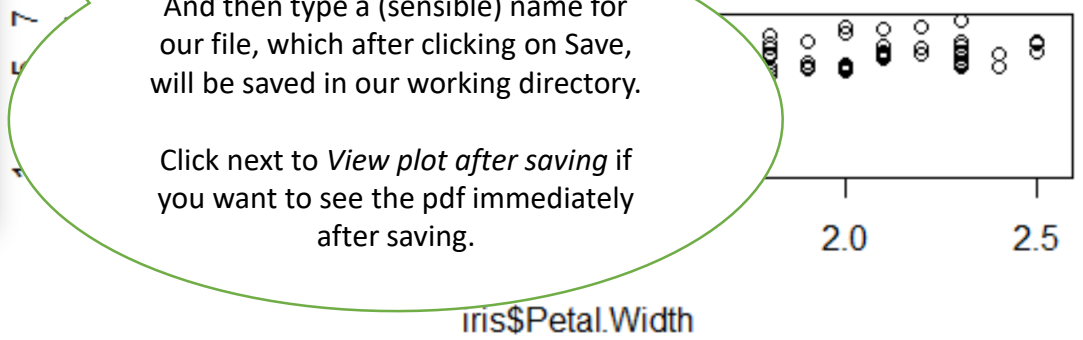
One way to export our plot, for example as a pdf file, is to click on the Export button

Plots | Packages | Help | Viewer

Zoom | Export | Publish

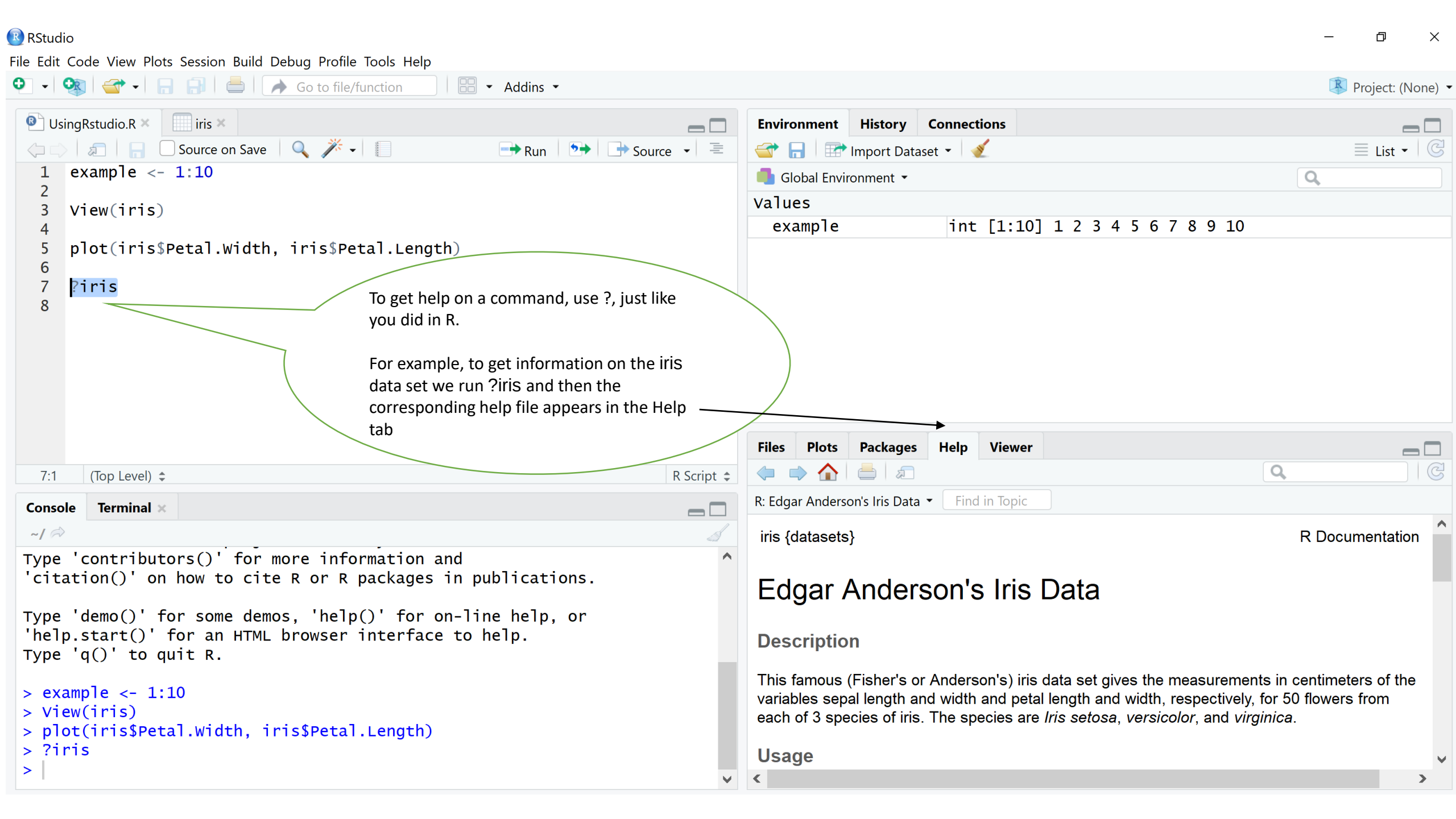
And then type a (sensible) name for our file, which after clicking on Save, will be saved in our working directory.

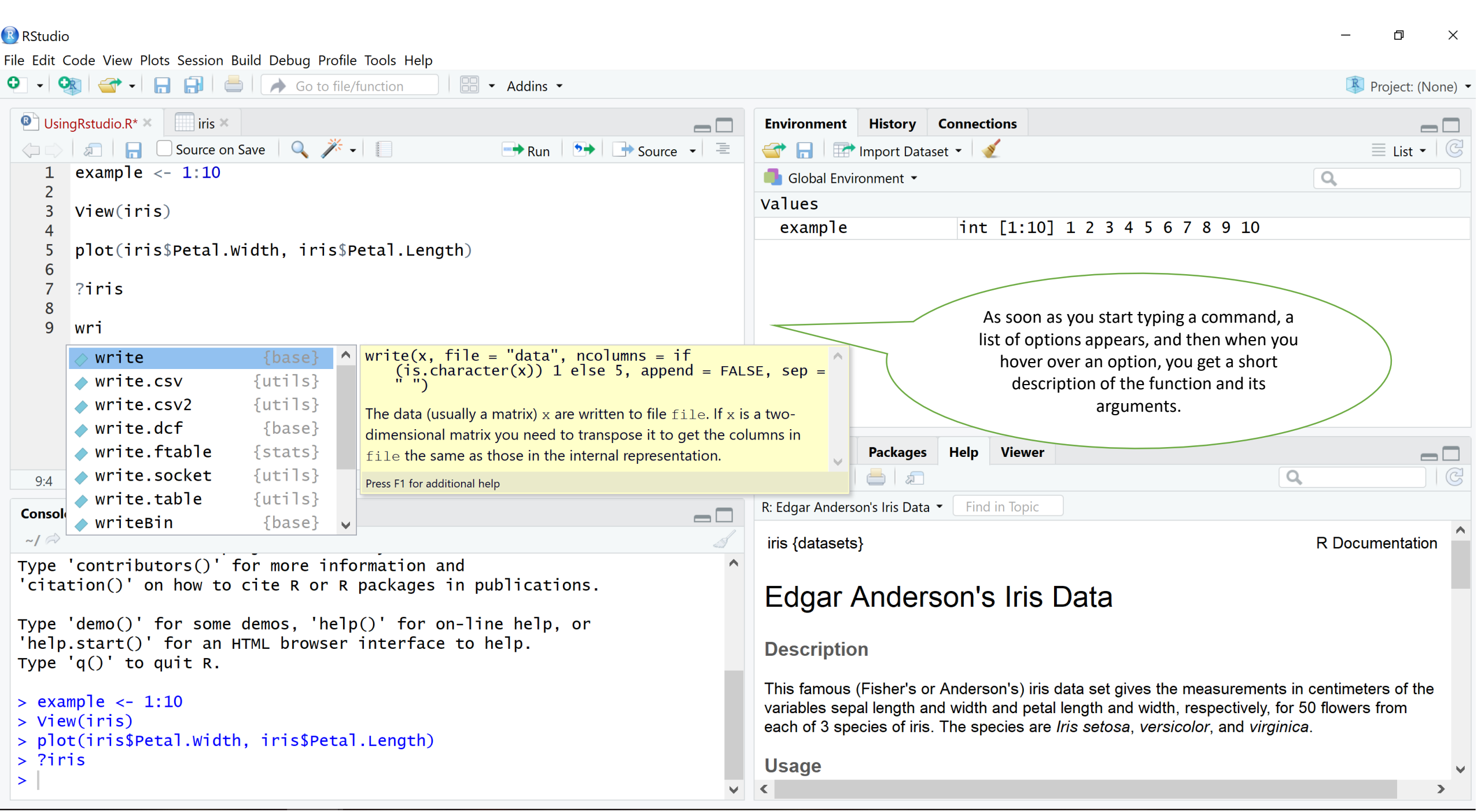
Click next to *View plot after saving* if you want to see the pdf immediately after saving.



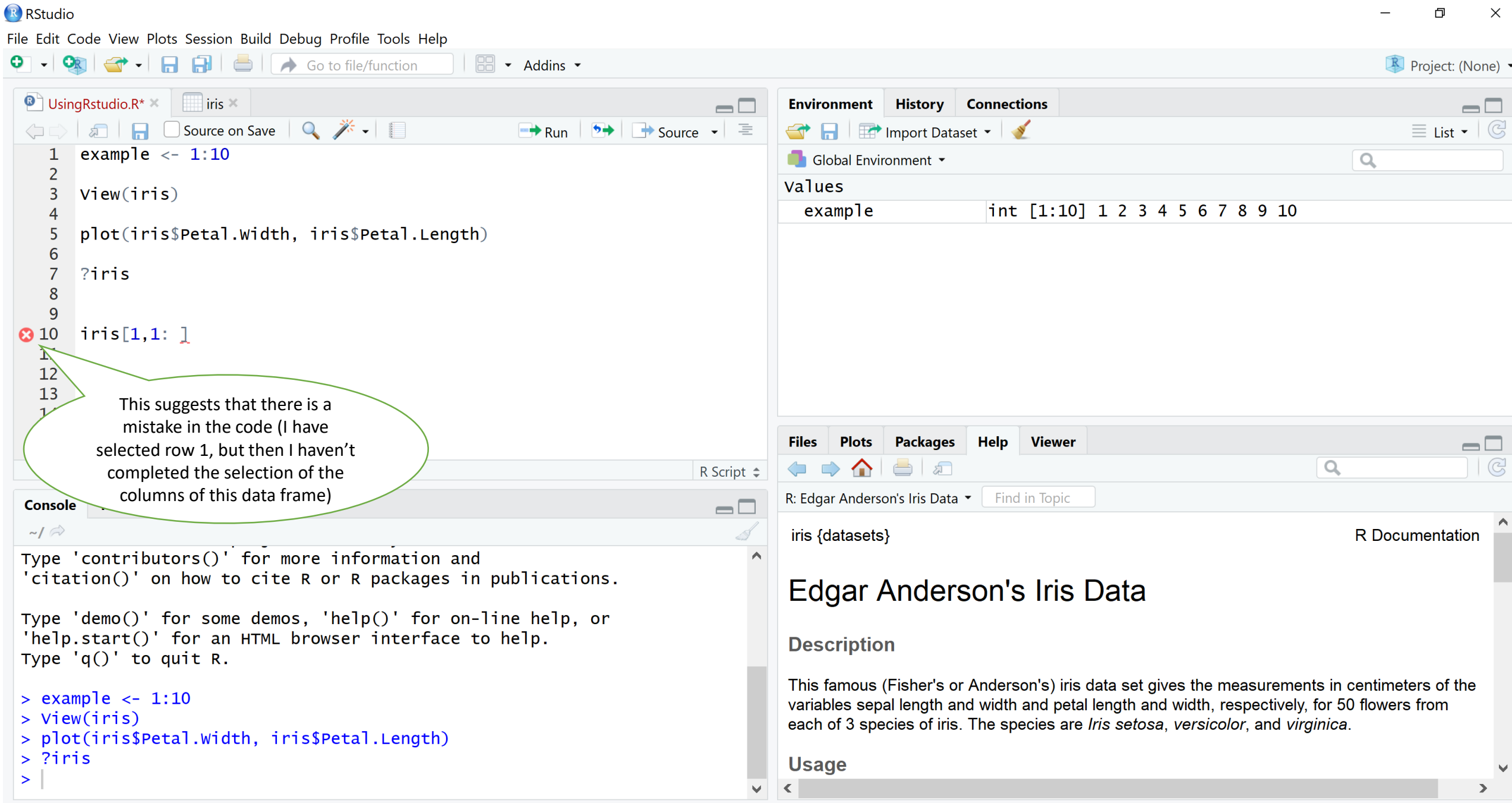
Useful features

Getting help, seeing function arguments, finding mistakes in the code


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
UsingRstudio.R
iris
Source on Save
Run
Source
1 example <- 1:10
2
3 View(iris)
4
5 plot(iris$Petal.Width, iris$Petal.Length)
6
7 ?iris
8
To get help on a command, use ?, just like you did in R.
For example, to get information on the iris data set we run ?iris and then the corresponding help file appears in the Help tab
7:1
(Top Level)
R Script
Environment
History
Connections
Import Dataset
List
Global Environment
Values
example
int [1:10] 1 2 3 4 5 6 7 8 9 10
Files
Plots
Packages
Help
Viewer
R: Edgar Anderson's Iris Data
Find in Topic
Console
Terminal
~/
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.
> example <- 1:10
> View(iris)
> plot(iris$Petal.Width, iris$Petal.Length)
> ?iris
>
iris {datasets}
R Documentation
Edgar Anderson's Iris Data
Description
This famous (Fisher's or Anderson's) iris data set gives the measurements in centimeters of the variables sepal length and width and petal length and width, respectively, for 50 flowers from each of 3 species of iris. The species are Iris setosa, versicolor, and virginica.
Usage


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
UsingRstudio.R*
iris
Source on Save
Run
Source
1 example <- 1:10
2
3 View(iris)
4
5 plot(iris$Petal.Width, iris$Petal.Length)
6
7 ?iris
8
9 wri
write {base}
write.csv {utils}
write.csv2 {utils}
write.dcf {base}
write.ftable {stats}
write.socket {utils}
write.table {utils}
writeBin {base}
write(x, file = "data", ncolumns = if (is.character(x)) 1 else 5, append = FALSE, sep = " ")
The data (usually a matrix) x are written to file file. If x is a two-dimensional matrix you need to transpose it to get the columns in file the same as those in the internal representation.
Press F1 for additional help
9:4
Console
~/
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.
> example <- 1:10
> View(iris)
> plot(iris$Petal.Width, iris$Petal.Length)
> ?iris
>
Environment
History
Connections
Import Dataset
List
Global Environment
Values
example
int [1:10] 1 2 3 4 5 6 7 8 9 10
As soon as you start typing a command, a list of options appears, and then when you hover over an option, you get a short description of the function and its arguments.
Packages
Help
Viewer
R: Edgar Anderson's Iris Data
Find in Topic
iris {datasets}
R Documentation
Edgar Anderson's Iris Data
Description
This famous (Fisher's or Anderson's) iris data set gives the measurements in centimeters of the variables sepal length and width and petal length and width, respectively, for 50 flowers from each of 3 species of iris. The species are Iris setosa, versicolor, and virginica.
Usage

RStudio IDE helps you find mistakes in your code (see example below)



Where can you learn more?

To learn more about all of the features of **RStudio IDE**, you can watch the series of webinars available on the Rstudio website, especially Part1, which lasts for about 30’ and gives you a lot of useful information on

- command-line shortcuts, writing shortcuts and navigating shortcuts
- tab-completion
- commenting/uncommenting blocks of code
- and many more useful features.

https://www.rstudio.com/resources/webinars/rstudio-essentials-webinar-series-part-1/