

INTRODUCTION TO 'R'

INTRODUCTION TO - R

- R is a **programming language** and **environment** commonly used in **statistical computing, data analytics** and **scientific research**.
- It is one of the most popular languages used by **statisticians, data analysts, researchers** and **marketers** to **retrieve, clean, analyze, visualize** and **present data**.
- Due to its **expressive syntax** and **easy-to-use interface**, it has grown in popularity in recent years.

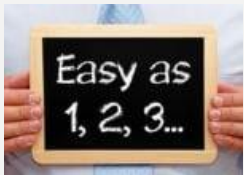
WHY – R ???



R is a programming and statistical language.



R is used for Data Analysis and Visualization.

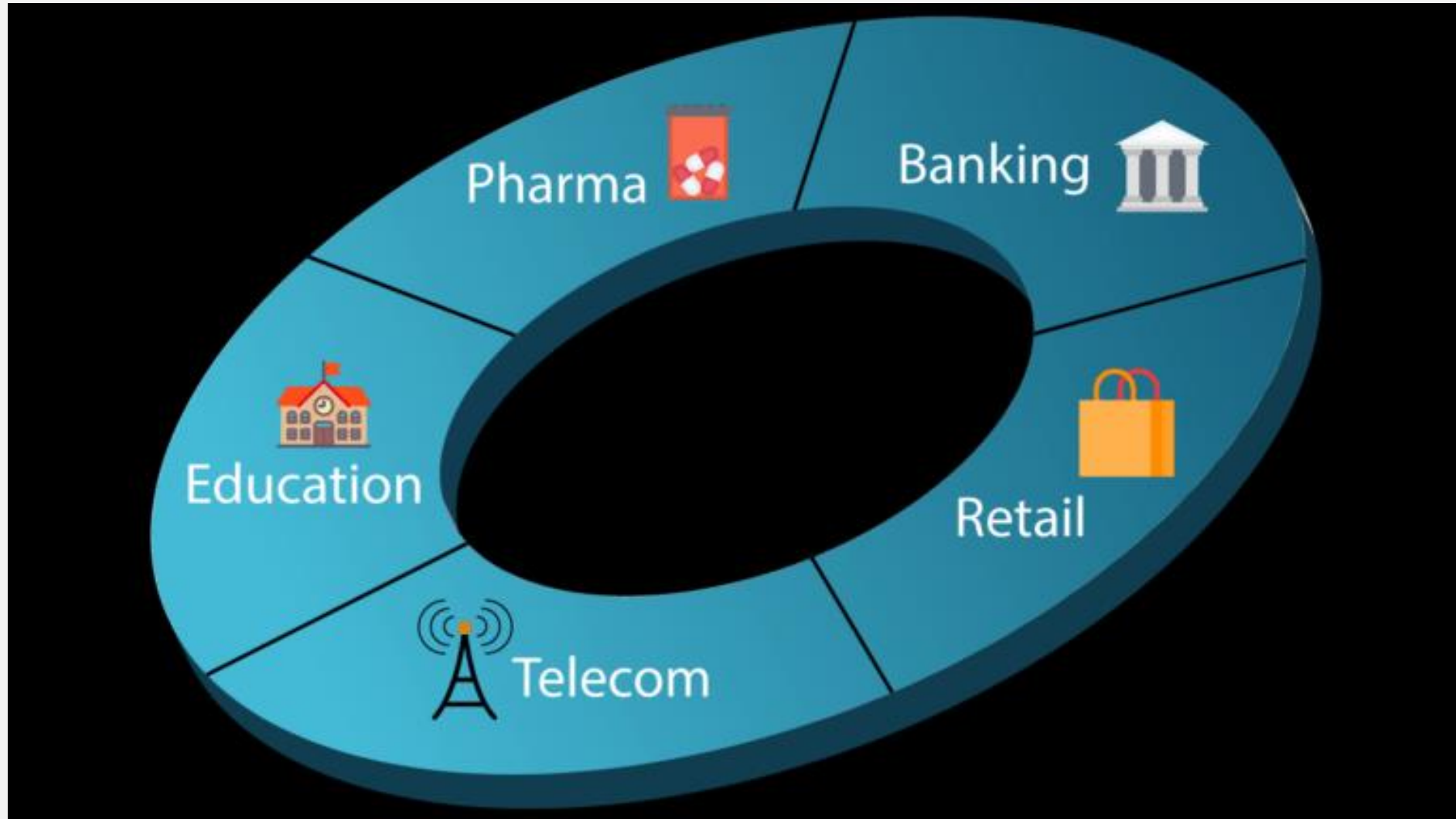


R is simple and easy to learn, read and write.



R is an example of a FLOSS (Free Libre and Open Source Software) where one can freely distribute copies of this software, read its source code, modify it, etc.

WHO USES - R?



WHO USES - R?

Company	Application/Contribution
Twitter	Monitor user experience
Ford	Analyse social media to support design decisions for their cars
New York Times	Infographics, data journalism
Microsoft	Released Microsoft R Open, an enhanced R distribution and Microsoft R server after acquiring Revolution Analytics in 2015
Human Rights Data Analysis Group	Measure the impact of war
Google	Created the R style guide for the R user community inside Google

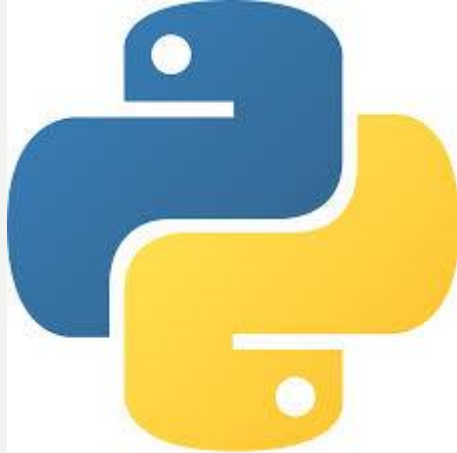
IS R PROGRAMMING AN EASY LANGUAGE TO LEARN?

- The syntax that **R uses is a bit different** from other common programming languages.
- We will not find ourselves writing a lot of if conditions or loops while writing code in the R language.
- There are other programming constructs like **vectors, lists, frames, data tables, matrices** etc. that allow you to perform transformations on data in bulk.

IS R PROGRAMMING AN EASY LANGUAGE TO LEARN?

- Many researchers are learning R as their first language to solve their data analysis needs.
- That's the power of the R programming, it is simple enough to learn as you go.
- All you need is data and a clear intent to draw a conclusion based on analysis on that data.

ALTERNATIVES TO R - PROGRAMMING



Python – Popular general purpose language

- **SAS** (Statistical Analysis System)



SPSS – Software package for statistical analysis

ALTERNATIVES TO R - PROGRAMMING

- **Python** – Popular general purpose language
- Very powerful high-level, object-oriented programming language with an easy-to-use and simple syntax.
- Extremely popular among data scientists and researchers.
- Most of the packages in R have equivalent libraries in Python as well.

ALTERNATIVES TO R - PROGRAMMING

R vs Python

- If you are trying to analyze a dataset and present the findings in a research paper, then **R** is probably a better choice.
- But if you are writing a data analysis program that runs in a distributed system and interacts with lots of other components, it would be preferable to work with **Python**.

INSTALLATION OF R

Most Popular Software



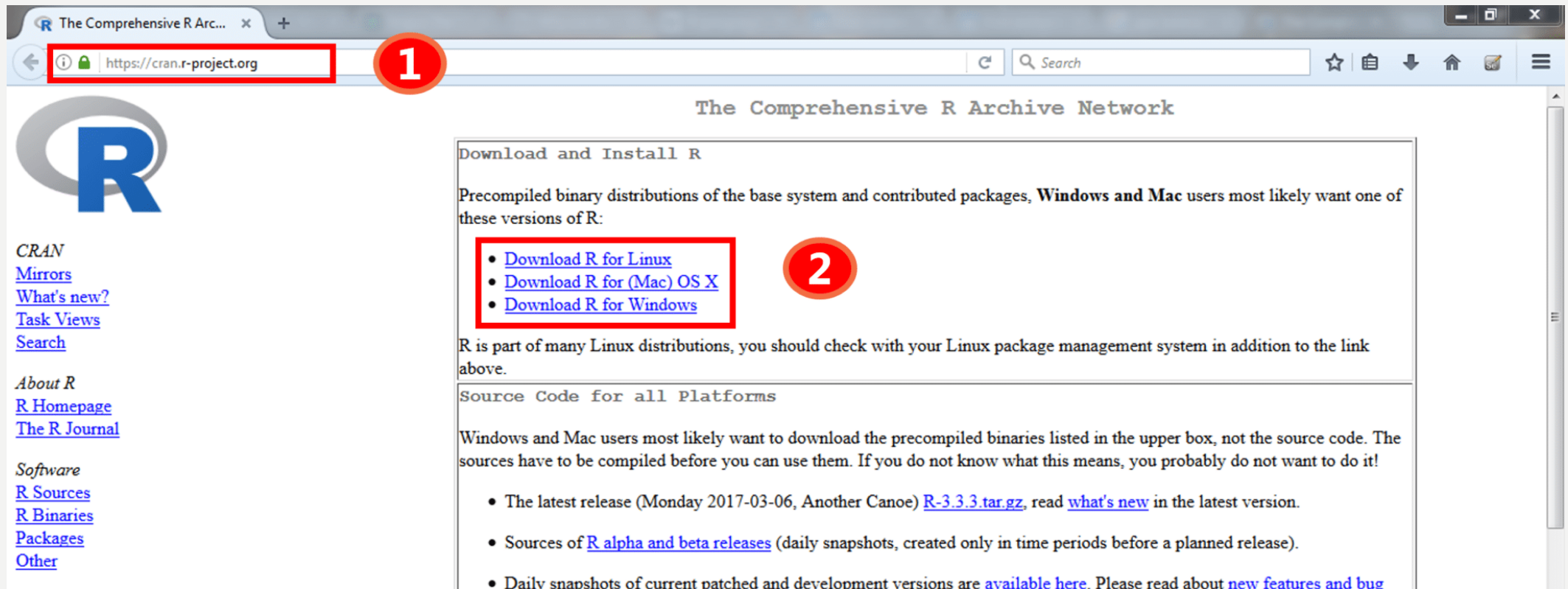
R-Console



R-Studio

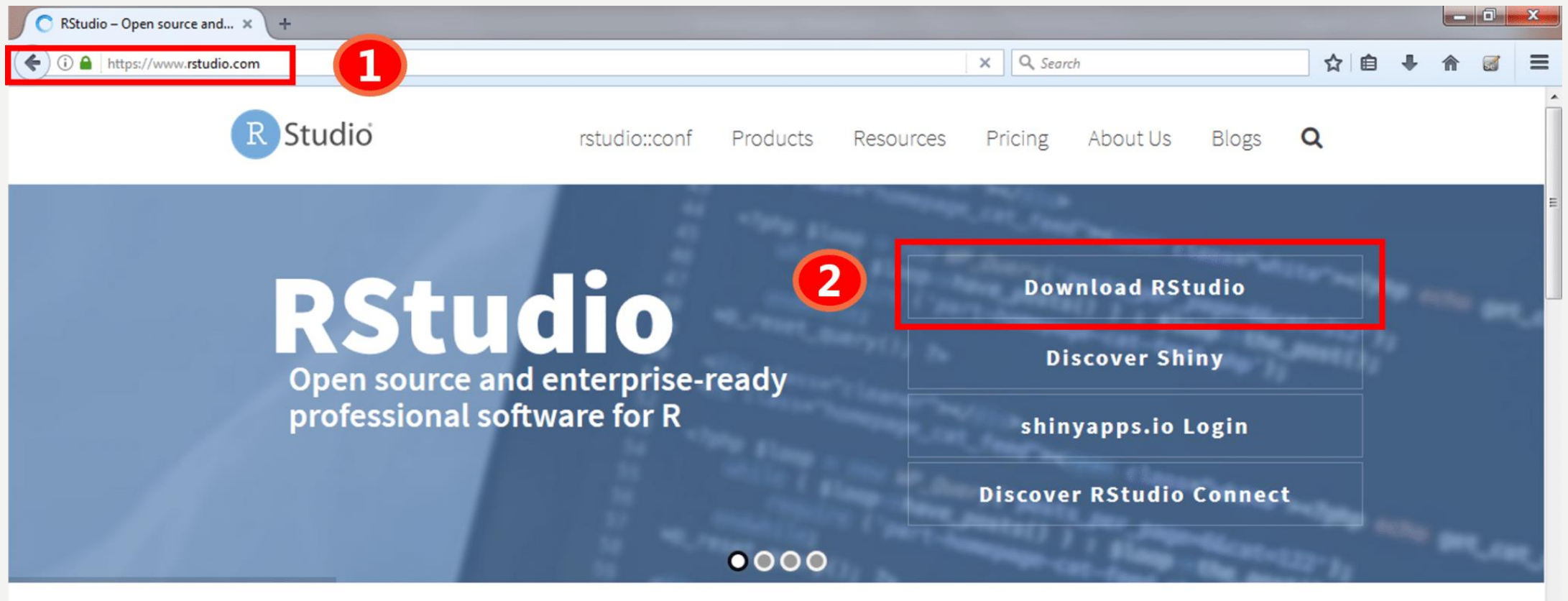
INSTALLATION OF R

- **Step 1** : Go to the link- <https://cran.r-project.org/>
- **Step 2** : Download and install R (latest version) on your system.

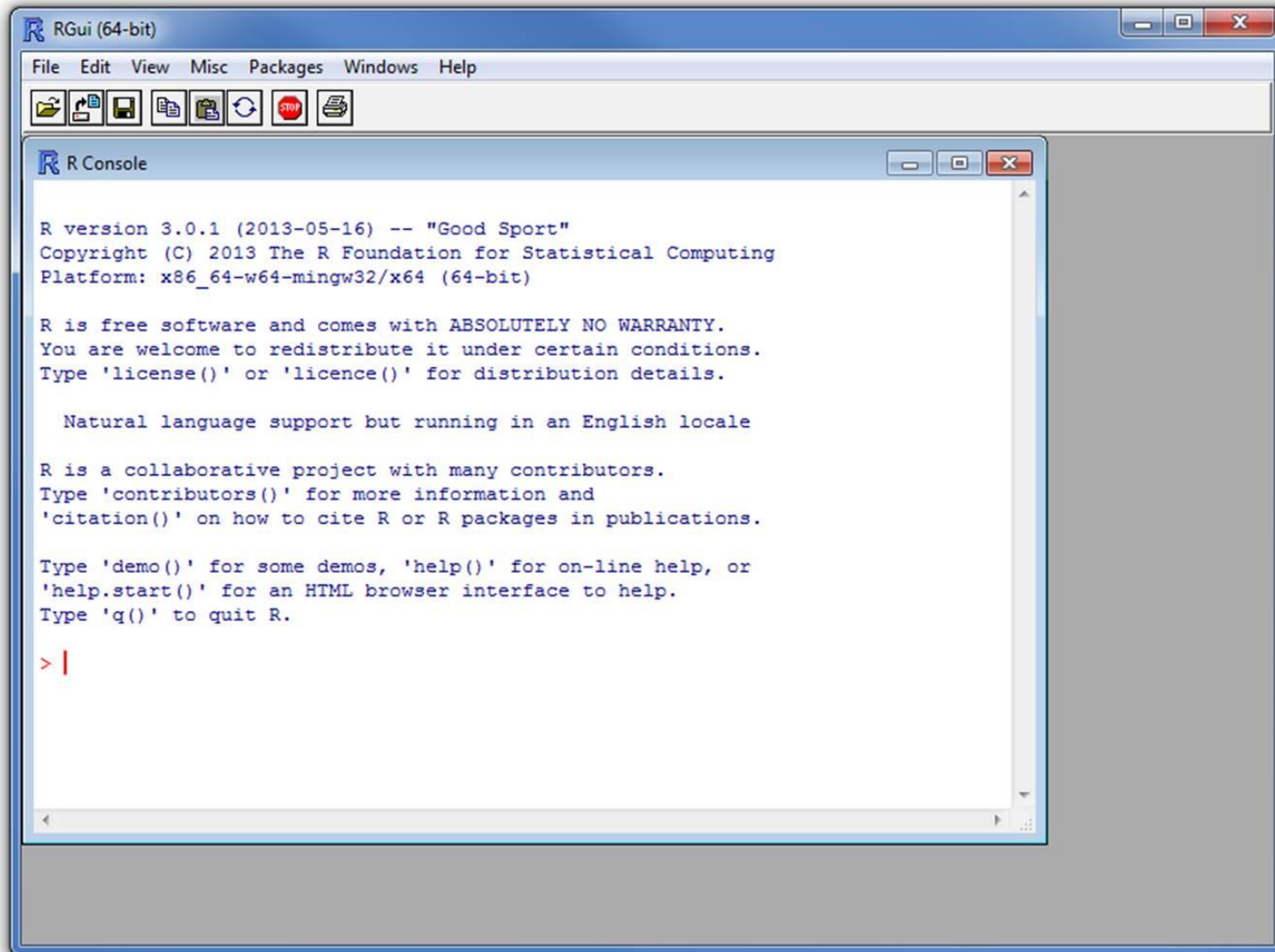


INSTALLATION OF R

- **Step 1:** Go to the link- <https://www.rstudio.com/>
- **Step 2:** Download and install RStudio on your system.



SAMPLE SCREENS – R CONSOLE



The screenshot shows the RGui (64-bit) window. The title bar reads "RGui (64-bit)". The menu bar includes "File", "Edit", "View", "Misc", "Packages", "Windows", and "Help". Below the menu bar is a toolbar with icons for file operations and execution. The main window contains an "R Console" pane. The console output displays the R version (3.0.1), copyright information (© 2013 The R Foundation for Statistical Computing), and platform details (x86_64-w64-mingw32/x64 (64-bit)). It also includes a disclaimer about the software being free and without warranty, and provides instructions on how to use various R functions like 'license()', 'contributors()', 'citation()', 'demo()', 'help()', and 'q()'.

```
R version 3.0.1 (2013-05-16) -- "Good Sport"
Copyright (C) 2013 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

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

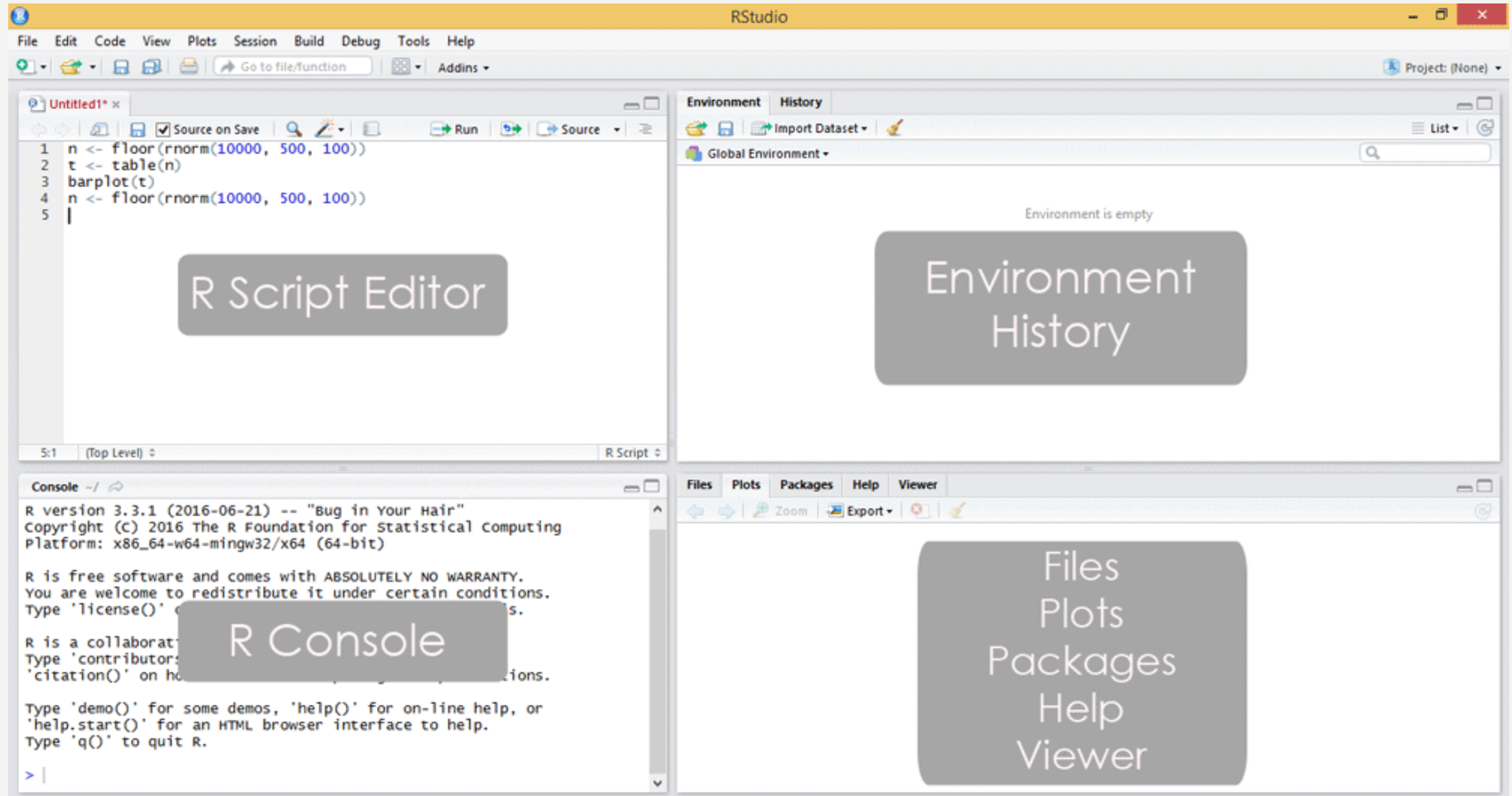
Natural language support but running in an English locale

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.

> |
```

SAMPLE SCREENS – R STUDIO



GETTING HELP IN - R

- **help.start()** # general help
- **help(function_name)** # help about a function
- **? function_name** # same thing
- **apropos(" function_name ")** # list all functions containing given string
- **example(function_name)** # show an example of a function

GETTING HELP IN - R

search for a function in help manuals and archived mailing lists

RSiteSearch("function_name")

get vignettes on using installed packages

vignette() # show available vignettes

vignette("function_name") # show specific vignette

GETTING HELP IN - R

demo is a user-friendly interface to running some demonstration R scripts

```
demo()           # Show all available demos
```

```
demo(package = "httr")  # Show all demos in a package
```

```
demo("oauth1-twitter", package = "httr")  #Run a specific demo
```