

# 고고학 자료 통계분석

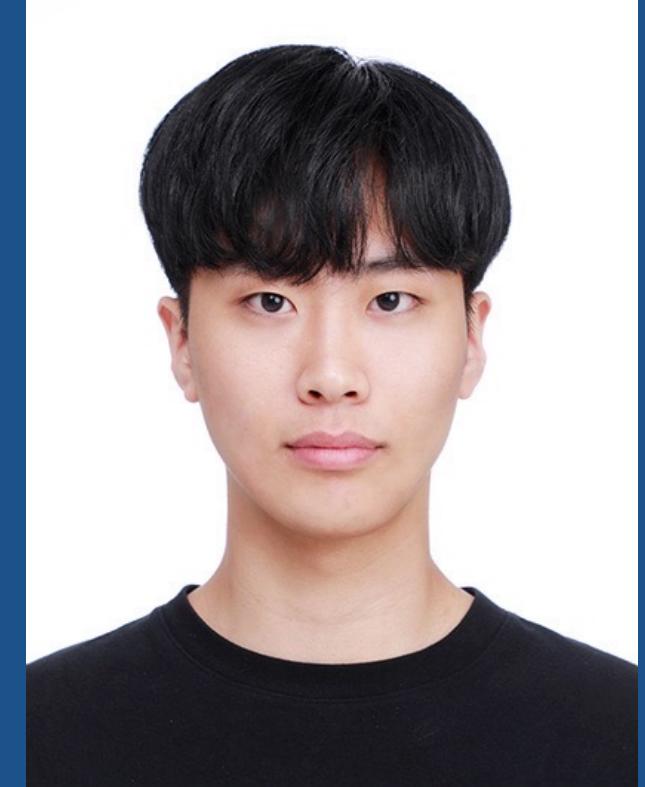
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Week 1 : Intro

숭실대학교 사학과 석사과정 1학기  
주 찬 혁

# 소개

- 이름 : 주찬혁
- 나이 : 26세
- 학력 :  
동국대학교 고고미술사학과 졸업  
숭실대학교 사학과 석사 1학기
- 관심분야 :  
원삼국시대, 백제 한성기, 중부지역, 인구변동



# 계획

주차	제목	내용
1	Intro	소개, R 설치
2	기초 통계(1)	모집단과 표본, 기술통계량
3	기초 통계(2)	변수의 종류, 가설과 오류, 분석 절차
4	전처리	데이터 전처리
5	시각화	다양한 종류의 그래프
6	검정	t-검정, Median Polish
7	회귀분석	선형회귀, 다중선형회귀, 로지스틱회귀
8	군집분석	K-means,
9	판별분석	DA, MDA
10	주성분분석	PCA

# 고고학자료에 통계분석이 필요한 이유

- 급격히 증가한 고고학 자료의 수량.
- 시각화를 통해 직관적인 설명 가능.
- 현상을 보다 객관적으로 설명할 수 있음.
- 연구의 스펙트럼을 넓힐 수 있음.
- 비가시적인 현상을 포착할 수 있음.

# 다양한 통계 프로그램



# R?

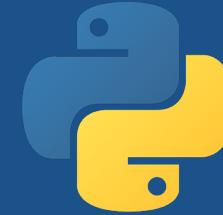
- 통계 및 그래프 작성을 위한 프로그래밍 언어
- 인터프리터 형식
- 절차지향적 프로그래밍
- 무료!
- 이미 만들어진 다양한 패키지 사용 가능  
(`ggplot2`, `dplyr`, `rcarbon` ...)



# R vs Python



- 절차지향적
- 거의 모든 분석이 패키지로 구현되어 있음
- 분야별로 패키지들이 세분화되어 있음

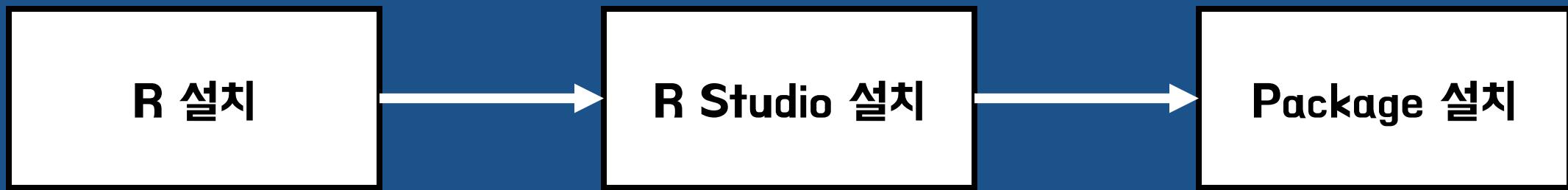


- 객체지향적
- 범용성 우수
- 배우기 쉬움
- 코드 가독성 우수
- 웹 서비스 가능

# R 설치

- 참고 : <https://iamoverthemoon.tistory.com/64>
- R 홈페이지 : <https://www.r-project.org/>
- R Studio 홈페이지 : <https://www.rstudio.com/>

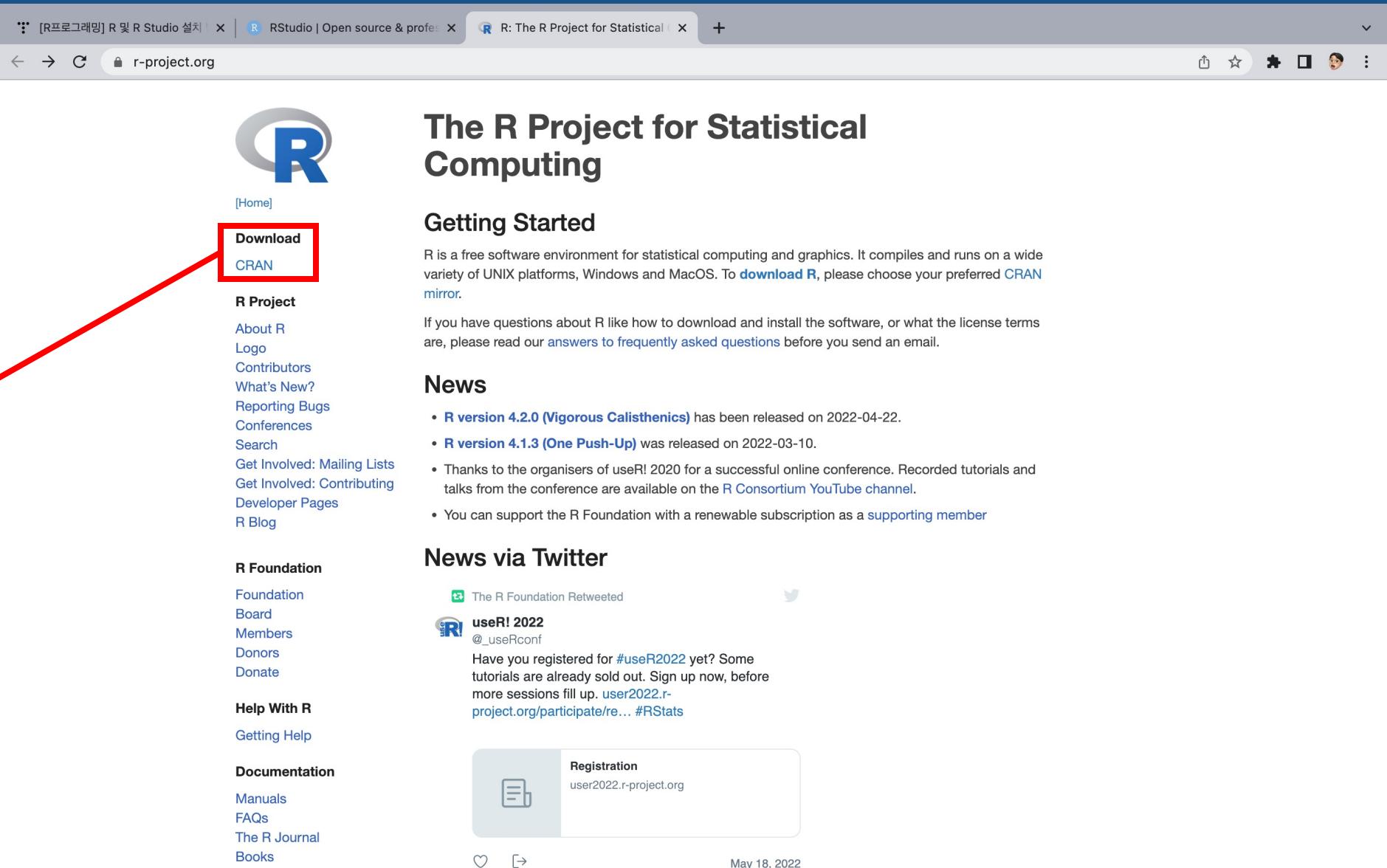
\*주의사항 : 경로에 한글이 존재하면 오류가 발생할 수 있음!



# R 설치

## \* 곱통

R 홈페이지에  
접속 후  
**Download 탭의  
CRAN 클릭**



The R Project for Statistical Computing

**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 MacOS. 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 4.2.0 \(Vigorous Calisthenics\)](#) has been released on 2022-04-22.
- [R version 4.1.3 \(One Push-Up\)](#) was released on 2022-03-10.
- Thanks to the organisers of user! 2020 for a successful online conference. Recorded tutorials and talks from the conference are available on the [R Consortium YouTube channel](#).
- You can support the R Foundation with a renewable subscription as a [supporting member](#)

**News via Twitter**

The R Foundation Retweeted

**useR! 2022**  
@\_useRconf

Have you registered for [#useR2022](#) yet? Some tutorials are already sold out. Sign up now, before more sessions fill up. [user2022.r-project.org/participate/re... #RStats](#)

Registration  
user2022.r-project.org

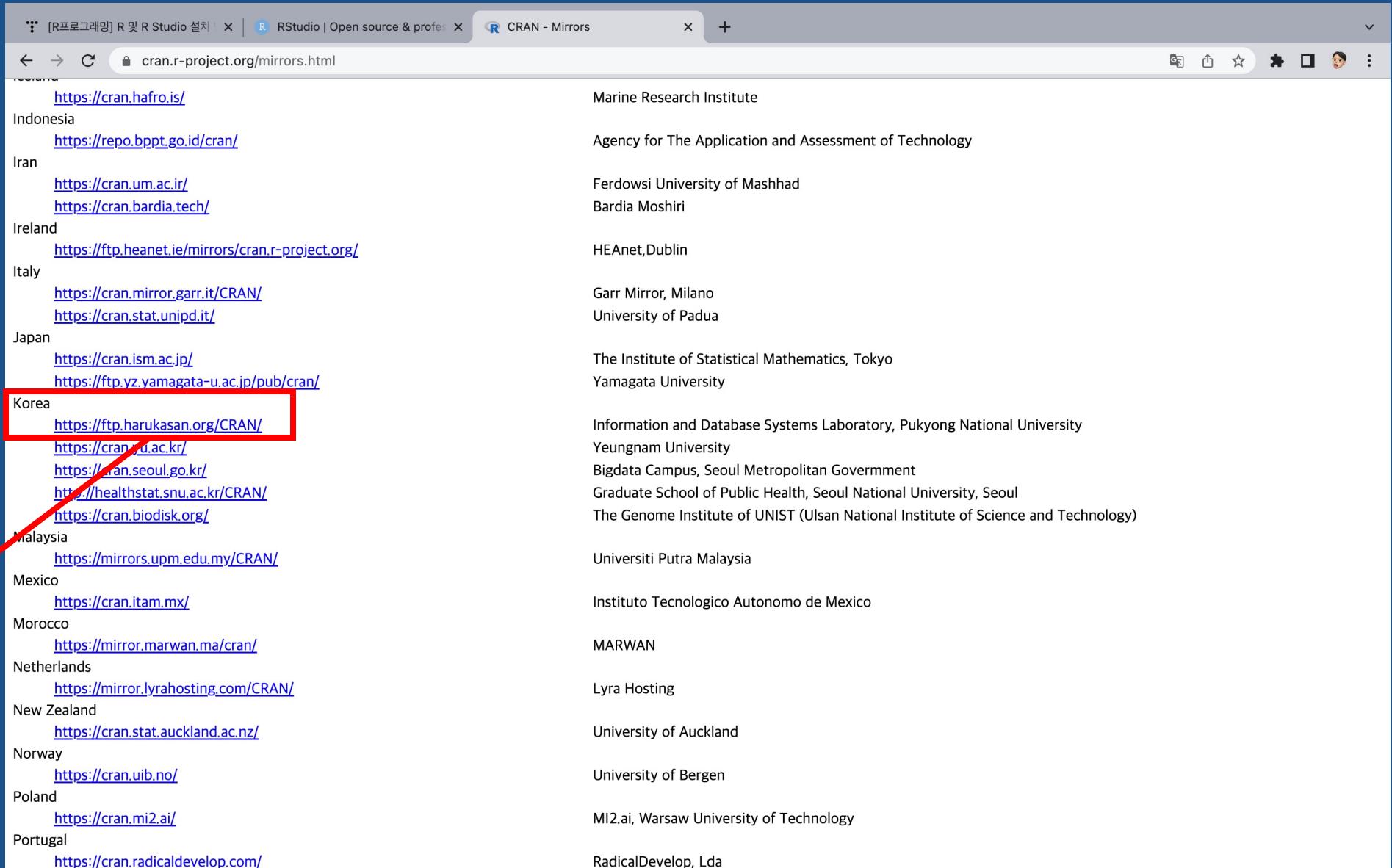
May 18, 2022

[Home]  
**Download CRAN**  
R Project  
About R  
Logo  
Contributors  
What's New?  
Reporting Bugs  
Conferences  
Search  
Get Involved: Mailing Lists  
Get Involved: Contributing  
Developer Pages  
R Blog  
R Foundation  
Foundation  
Board  
Members  
Donors  
Donate  
Help With R  
Getting Help  
Documentation  
Manuals  
FAQs  
The R Journal  
Books  
Contact

# R 설치

## \*공통

Korea 탭을  
찾아서 하위의  
아무 항목이나  
클릭



The screenshot shows a list of CRAN mirrors categorized by country. The 'Korea' section is highlighted with a red box and a red arrow from the sidebar text. The highlighted URL is <https://ftp.harukasan.org/CRAN/>.

Country	Mirror URL	Description
Indonesia	<a href="https://cran.hafro.is/">https://cran.hafro.is/</a>	Marine Research Institute
Iran	<a href="https://repo.bppt.go.id/cran/">https://repo.bppt.go.id/cran/</a>	Agency for The Application and Assessment of Technology
Ireland	<a href="https://cran.um.ac.ir/">https://cran.um.ac.ir/</a>	Ferdowsi University of Mashhad
	<a href="https://cran.bardia.tech/">https://cran.bardia.tech/</a>	Bardia Moshiri
Italy	<a href="https://ftp.heanet.ie/mirrors/cran.r-project.org/">https://ftp.heanet.ie/mirrors/cran.r-project.org/</a>	HEAnet,Dublin
Japan	<a href="https://cran.mirror.garr.it/CRAN/">https://cran.mirror.garr.it/CRAN/</a>	Garr Mirror, Milano
	<a href="https://cran.stat.unipd.it/">https://cran.stat.unipd.it/</a>	University of Padua
Korea	<a href="https://ftp.harukasan.org/CRAN/">https://ftp.harukasan.org/CRAN/</a>	The Institute of Statistical Mathematics, Tokyo
	<a href="https://cran.knu.ac.kr/">https://cran.knu.ac.kr/</a>	Yamagata University
	<a href="https://cran.seoul.go.kr/">https://cran.seoul.go.kr/</a>	Information and Database Systems Laboratory, Pukyong National University
	<a href="http://healthstat.snu.ac.kr/CRAN/">http://healthstat.snu.ac.kr/CRAN/</a>	Yeungnam University
	<a href="https://cran.biostat.knu.ac.kr/">https://cran.biostat.knu.ac.kr/</a>	Bigdata Campus, Seoul Metropolitan Government
Malaysia	<a href="https://mirrors.upm.edu.my/CRAN/">https://mirrors.upm.edu.my/CRAN/</a>	Graduate School of Public Health, Seoul National University, Seoul
Mexico	<a href="https://cran.itam.mx/">https://cran.itam.mx/</a>	The Genome Institute of UNIST (Ulsan National Institute of Science and Technology)
Morocco	<a href="https://mirror.marwan.ma/cran/">https://mirror.marwan.ma/cran/</a>	Universiti Putra Malaysia
Netherlands	<a href="https://mirror.lyrahosting.com/CRAN/">https://mirror.lyrahosting.com/CRAN/</a>	Instituto Tecnologico Autonomo de Mexico
New Zealand	<a href="https://cran.stat.auckland.ac.nz/">https://cran.stat.auckland.ac.nz/</a>	MARWAN
Norway	<a href="https://cran.uib.no/">https://cran.uib.no/</a>	Lyra Hosting
Poland	<a href="https://cran.mi2.ai/">https://cran.mi2.ai/</a>	University of Auckland
Portugal	<a href="https://cran.radicaldevelop.com/">https://cran.radicaldevelop.com/</a>	University of Bergen
		MI2.ai, Warsaw University of Technology
		RadicalDevelop, Lda

# R 설치

## \*공통

Download and  
Install R 탭에서  
본인 컴퓨터  
운영체제에 맞는  
항목 클릭

The screenshot shows a web browser window with the URL <https://ftp.harukasan.org/CRAN/>. The page title is "The Comprehensive R Archive Network". On the left, there's a sidebar with links for CRAN, Mirrors, What's new?, Search, About R, R Homepage, The R Journal, Software, R Sources, R Binaries, Packages, Task Views, Other, Documentation, Manuals, FAQs, and Contributed. A red box highlights the "Download and Install R" section on the right. This section contains a heading "Download and Install R" and a paragraph about precompiled binary distributions for Windows and Mac users. It lists three download links: "Download R for Linux (Debian, Fedora/Redhat, Ubuntu)", "Download R for macOS", and "Download R for Windows". These last two links are also highlighted with a red box. Below this, there's a note about Linux distributions and a "Source Code for all Platforms" section with links for the latest release, alpha/beta releases, daily snapshots, source code of older versions, and contributed packages. At the bottom, there's a "Questions About R" section and a "What are R and CRAN?" section.

**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 (2022-04-22, Vigorous Calisthenics) [R-4.2.0.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, classification, clustering, etc. Please consult the [R project homepage](#) for further information.

CRAN is a network of ftp and web servers around the world that store identical, up-to-date, versions of code and documentation for R. Please use the CRAN [mirror](#) nearest to you to minimize network load.

**Submitting to CRAN**

# R 설치

## \*Windows

Subdirectories  
탭의 base 클릭

The screenshot shows a web browser window with three tabs open:

- [R프로그래밍] R 및 R Studio 설치
- RStudio | Open source & profess...
- The Comprehensive R Archive

The main content area is titled "R for Windows". It features a large "R" logo and a sidebar with various links. The "Subdirectories" section is highlighted with a red box around the "base" link.

**Subdirectories:**

- [base](#) (highlighted with a red box)
- [contrib](#)
- [old contrib](#)
- [Rtools](#)

Binaries for base distribution. This is what you want to [install R for the first time](#).  
Binaries of contributed CRAN packages (for R >= 3.4.x).  
Binaries of contributed CRAN packages for outdated versions of R (for R < 3.4.x).  
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.

# R 설치

## \*Windows

Download R-X.X.X for Windows 클릭

이후 .exe 파일을 실행시켜서 설치

The screenshot shows a web browser window with three tabs open:

- [R프로그래밍] R 및 R Studio 설치
- RStudio | Open source & professional R IDE
- The Comprehensive R Archive

The main content area displays the "R-4.2.0 for Windows" page. On the left, there's a large R logo and a sidebar with links like CRAN, Mirrors, What's new?, Search, About R, R Homepage, and The R Journal. Below that is a section for Software with links to R Sources, R Binaries, Packages, Task Views, and Other. Another section for Documentation includes Manuals, FAQs, and Contributed.

The right side of the page features a prominent red box highlighting the download link: "Download R-4.2.0 for Windows (79 megabytes, 64 bit)". Below this link are links to "README on the Windows binary distribution" and "New features in this version". A note states that UCRT is required for this build, which is available since Windows 10 and Windows Server 2016. Older systems need to install it manually from a provided link. It also mentions how to verify the download using md5sum and provides links to the FAQ and Windows-specific FAQ.

Below the main content, there's a "Frequently asked questions" section with links to "Does R run under my version of Windows?" and "How do I update packages in my previous version of R?". A "Other builds" section lists links to the r-patched snapshot build, r-devel snapshot build, and previous releases. A note for webmasters provides a stable redirect link.

At the bottom, it says "Last change: 2022-04-22".

# R 설치

## \*MAC OS

각자의 프로세서에  
맞는 항목을 클릭

이후 .pkg 파일을  
실행시켜서 설치

The screenshot shows the CRAN website for macOS at <https://ftp.harukasan.org/CRAN/>. The page title is "R for macOS". It contains text about binary distributions and package availability, a note about precautions for old versions, and a link to the CRAN archive for older versions. It also includes a note about checking package integrity and a link to the latest release.

**Intel Mac:**

- R-4.2.0.pkg (notarized and signed)**  
SHA1-hash: 2a90fb8629e44f72f9d89d6a9bac9b71564587d7  
(ca. 90MB) for Intel Macs

**M1 이후 맥:**

- R-4.2.0-arm64.pkg (notarized and signed)**  
SHA1-hash: ada2602d245164d316967d24f5482b58e2dfddff  
(ca. 89MB) for M1 Macs only

**Latest release:**

**R 4.2.0** binary for macOS 10.13 (High Sierra) and higher, Intel 64-bit build, signed and notarized package.  
Contains R 4.2.0 framework, R.app GUI 1.78 in 64-bit for Intel Macs, Tcl/Tk 8.6.6 X11 libraries and Texinfo 6.7. The latter two components are optional and can be omitted when choosing "custom install", they are only needed if you want to use the `tcltk` R package or build package documentation from sources.

Note: the use of X11 (including `tcltk`) requires [XQuartz](#) to be installed (version 2.7.11 or later) since it is no longer part of macOS. Always re-install XQuartz when upgrading your macOS to a new major version.

This release supports Intel Macs, but it is also known to work using Rosetta2 on M1-based Macs. For native Apple silicon arm64 binary see below.

**Important:** this release uses Xcode 12.4 and GNU Fortran 8.2. If you wish to compile R packages from sources, you may need to download GNU Fortran 8.2 – see the [tools](#) directory.

**R 4.2.0** binary for macOS 11 (Big Sur) and higher, Apple silicon arm64 build, signed and notarized package.  
Contains R 4.2.0 framework, R.app GUI 1.78 for Apple silicon Macs (M1 and higher), Tcl/Tk 8.6.12 X11 libraries and Texinfo 6.8.

**Important:** this version does NOT work on older Intel-based Macs.

Note: the use of X11 (including `tcltk`) requires [XQuartz](#) (version 2.8.1 or later). Always re-install XQuartz when upgrading your macOS to a new major version.

This release uses Xcode 13.1 and experimental GNU Fortran 12 arm64 fork. If you wish to compile R

# R Studio 설치

The screenshot shows the RStudio website homepage. A red box highlights the 'Products' button in the top navigation bar. A red arrow points from this highlighted button to a larger, red-bordered box on the left side of the page containing the Korean text 'Products 클릭'. The main content area features a large heading 'RStudio Connect' and a description: 'is the best way to host and share data products made with R and Python.' Below this is a blue 'LEARN MORE' button. The right side of the page includes a navigation menu with links like DOWNLOAD, SUPPORT, DOCS, COMMUNITY, LEARN MORE, and Pricing. There is also a search icon and a user profile icon. The background features a network-like graphic of colored circles (blue, red, green, yellow) connected by lines.

Join us at [rstudio::conf\(2022\)](#) to sharpen your R skills. | July 25-28th in D.C. [LEARN MORE](#)

R Studio

Products Solutions Customers Resources About Pricing

COMMUNITY

**RStudio Connect** is the best way to host and share data products made with R and Python.

LEARN MORE

Level up your data science training with RStudio Academy

# R Studio 설치

The screenshot shows the RStudio website homepage. A red box highlights the 'RStudio' link under the 'OPEN SOURCE' heading, which is also highlighted with a red border. A red arrow points from the text 'RStudio 클릭' (Click RStudio) in the bottom-left corner to this highlighted link.

**Join us at rstudio::conf(2022) to sharpen your R skills. | July 25-28th in D.C. LEARN MORE**

**R Studio**

Products ▾ Solutions ▾ Customers Resources ▾ About ▾ Pricing

**OPEN SOURCE**  
Get started with R

- RStudio**  
The premier IDE for R
- RStudio Server  
RStudio anywhere using a web browser
- Shiny Server  
Put Shiny applications online
- R Packages  
Shiny, R Markdown, Tidyverse and more

**HOSTED SERVICES**  
Be our guest, be our guest

- RStudio Academy  
Next level training for you and your team
- RStudio Cloud  
Do, share, teach and learn data science
- RStudio Public Package Manager  
An easy way to access R packages
- shinyapps.io  
Let us host your Shiny applications

**PROFESSIONAL**  
Enterprise-ready

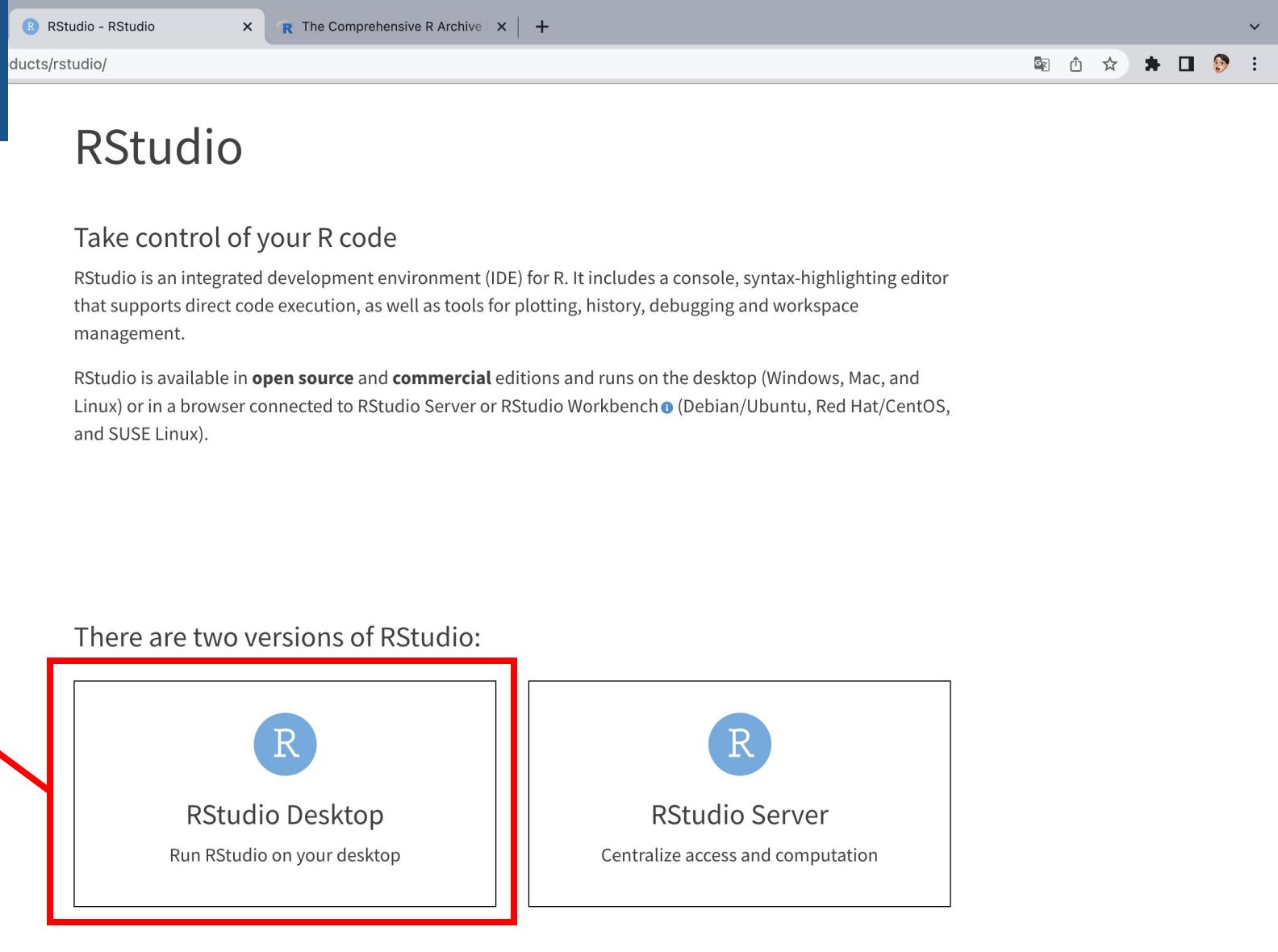
- RStudio Team  
A single home for R & Python Data Science Teams
- RStudio Workbench  
Scale, develop, and collaborate across R & Python
- RStudio Connect  
Easily share your insights
- RStudio Package Manager  
Control and distribute packages

<https://www.rstudio.com/#>

Level up your data science training with RStudio Academy.

# R Studio 설치

RStudio  
Desktop 클릭



The screenshot shows a web browser window with the title bar "RStudio - RStudio" and "The Comprehensive R Archive". The URL bar shows "products/rstudio/". The main content area displays the RStudio homepage with the heading "RStudio" and the tagline "Take control of your R code". It describes RStudio as an integrated development environment (IDE) for R, including a console, syntax-highlighting editor, tools for plotting, history, debugging, and workspace management. It mentions availability in open source and commercial editions for desktop (Windows, Mac, Linux) and browser-based access via RStudio Server or Workbench. A red box highlights the "RStudio Desktop" section, which says "There are two versions of RStudio:" followed by "RStudio Desktop" and "Run RStudio on your desktop". Another red box highlights the "RStudio Server" section, which says "Centralize access and computation".

RStudio

Take control of your R code

RStudio is an integrated development environment (IDE) for R. It includes a console, syntax-highlighting editor that supports direct code execution, as well as tools for plotting, history, debugging and workspace management.

RStudio is available in **open source** and **commercial** editions and runs on the desktop (Windows, Mac, and Linux) or in a browser connected to RStudio Server or RStudio Workbench (Debian/Ubuntu, Red Hat/CentOS, and SUSE Linux).

There are two versions of RStudio:

R

RStudio Desktop

Run RStudio on your desktop

R

RStudio Server

Centralize access and computation

# R Studio 설치

**DOWNLOAD  
RSTUDIO  
DESKTOP 클릭**

The screenshot shows the RStudio Desktop website. A red box highlights the text "DOWNLOAD RSTUDIO DESKTOP 클릭" on the left, with a red arrow pointing from it to the "DOWNLOAD RSTUDIO DESKTOP" button at the bottom center. The website has a header with tabs for "RStudio - RStudio" and "The Comprehensive R Archive". The main content area features the R Studio logo and two main sections: "Open Source Edition" and "RStudio Desktop Pro".

**Open Source Edition**

- Access RStudio locally
- Syntax highlighting, code completion, and smart indentation
- Execute R code directly from the source editor
- Quickly jump to function definitions
- View content changes in real-time with the Visual Markdown Editor
- Easily manage multiple working directories using projects
- Integrated R help and documentation
- Interactive debugger to diagnose and fix errors
- Extensive package development tools

**Overview**

**Support** Community forums only

**License** AGPL v3

**Pricing** Free

All of the features of open source; plus:

- A commercial license for organizations not able to use AGPL software
- Access to priority support
- [RStudio Professional Drivers](#)
- Connect directly to your RStudio Workbench i instance remotely

[RStudio License Agreement](#)

\$995/year

[DOWNLOAD FREE RSTUDIO DESKTOP PRO TRIAL](#)

[Purchase](#) | [Contact Sales](#)

# R Studio 설치

The screenshot shows the RStudio download page with a red box highlighting the 'RStudio Desktop' section. A red arrow points from this box to the 'DOWNLOAD' button for RStudio Desktop, which is highlighted with a red border.

**RStudio Desktop**

Open Source License

**Free**

**BUY**

**DOWNLOAD**

**Integrated Tools for R** ✓ ✓ ✓ ✓

**Priority Support** ✓ ✓ ✓

**Access via Web Browser** ✓ ✓ ✓ ✓

**RStudio Professional Drivers** ✓ ✓ ✓

**Connect to RStudio Workbench i remotely** ✓ ✓

**Enterprise Security** ✓

**Project Sharing** ✓

**Manage Multiple R Sessions & Versions** ✓

**Admin Dashboard** ✓

**Load Balancing** ✓

**RStudio Desktop Pro**

Commercial License

**\$995 /year**

**BUY**

**DOWNLOAD**

**RStudio Server**

Open Source License

**Free**

**BUY**

**RStudio Workbench i**

Commercial License

**\$4,975 /year**

**Evaluation | Learn more**

# R Studio 설치

**DOWNLOAD  
RSTUDIO FOR  
운영체제 클릭**

**이후 .dmg(Mac)  
/ .exe(Windows)  
파일을 실행시켜서  
설치**

RStudio Desktop 2022.02.2+485 - [Release Notes](#)

1. Install R. RStudio requires [R 3.3.0+](#).
2. Download RStudio Desktop. Recommended for your system:

[DOWNLOAD RSTUDIO FOR MAC  
2022.02.2+485 | 217.09MB](#)

Requires macOS 10.15+ (64-bit)



### All Installers

Linux users may need to [import RStudio's public code-signing key](#) prior to installation, depending on the operating system's security policy.

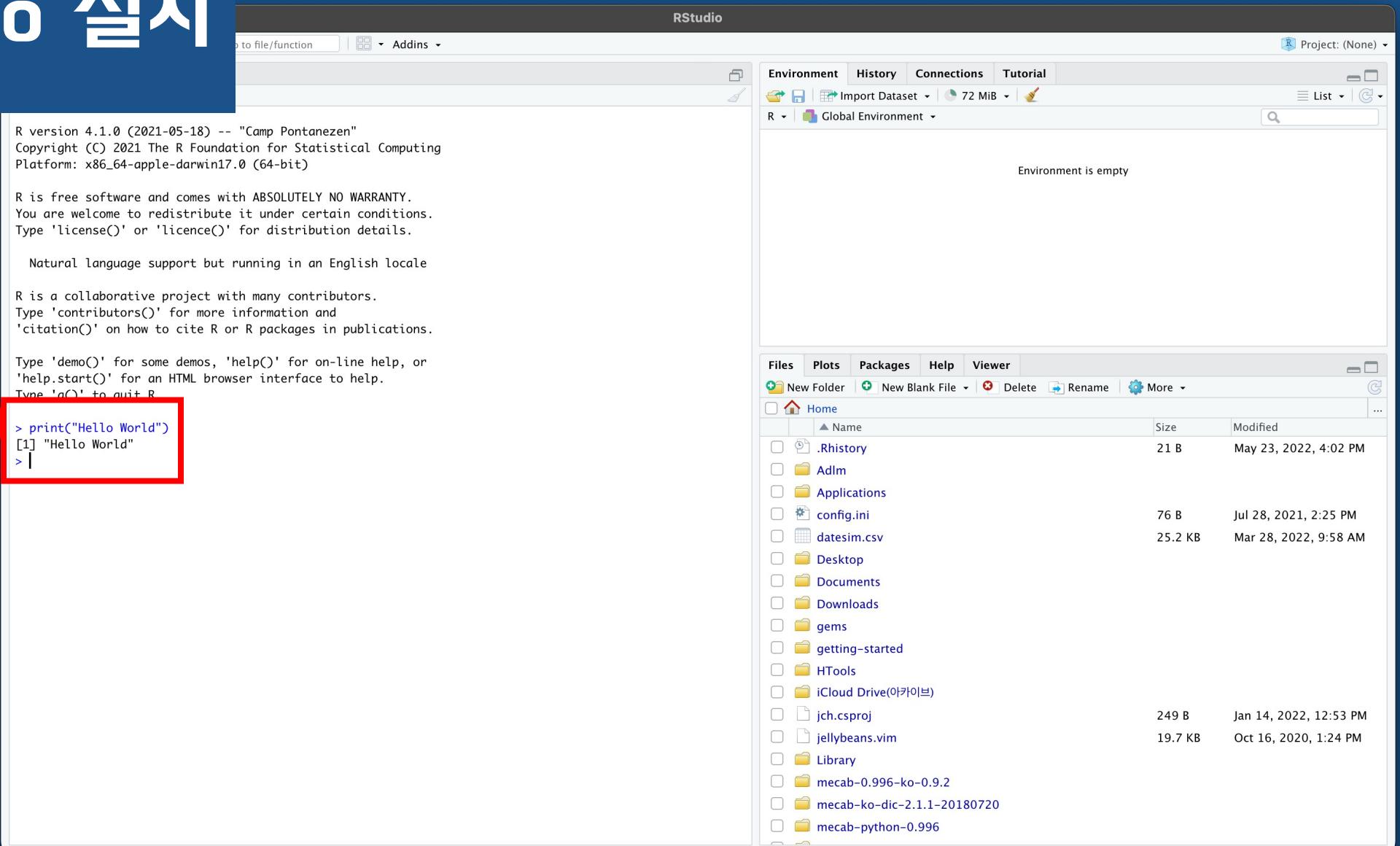
RStudio requires a 64-bit operating system. If you are on a 32 bit system, you can use an [older version of RStudio](#).

OS	Download	Size	SHA-256
Windows 10/11	<a href="#">RStudio-2022.02.2-485.exe</a>	177.27 MB	74187a33
macOS 10.15+	<a href="#">RStudio-2022.02.2-485.dmg</a>	217.09 MB	cda82e98
Ubuntu 18+/Debian 10+	<a href="#">rstudio-2022.02.2-485-amd64.deb</a>	128.58 MB	508a6e9c
Fedor 19/Red Hat 7	<a href="#">rstudio-2022.02.2-485-x86_64.rpm</a>	144.66 MB	7400234c

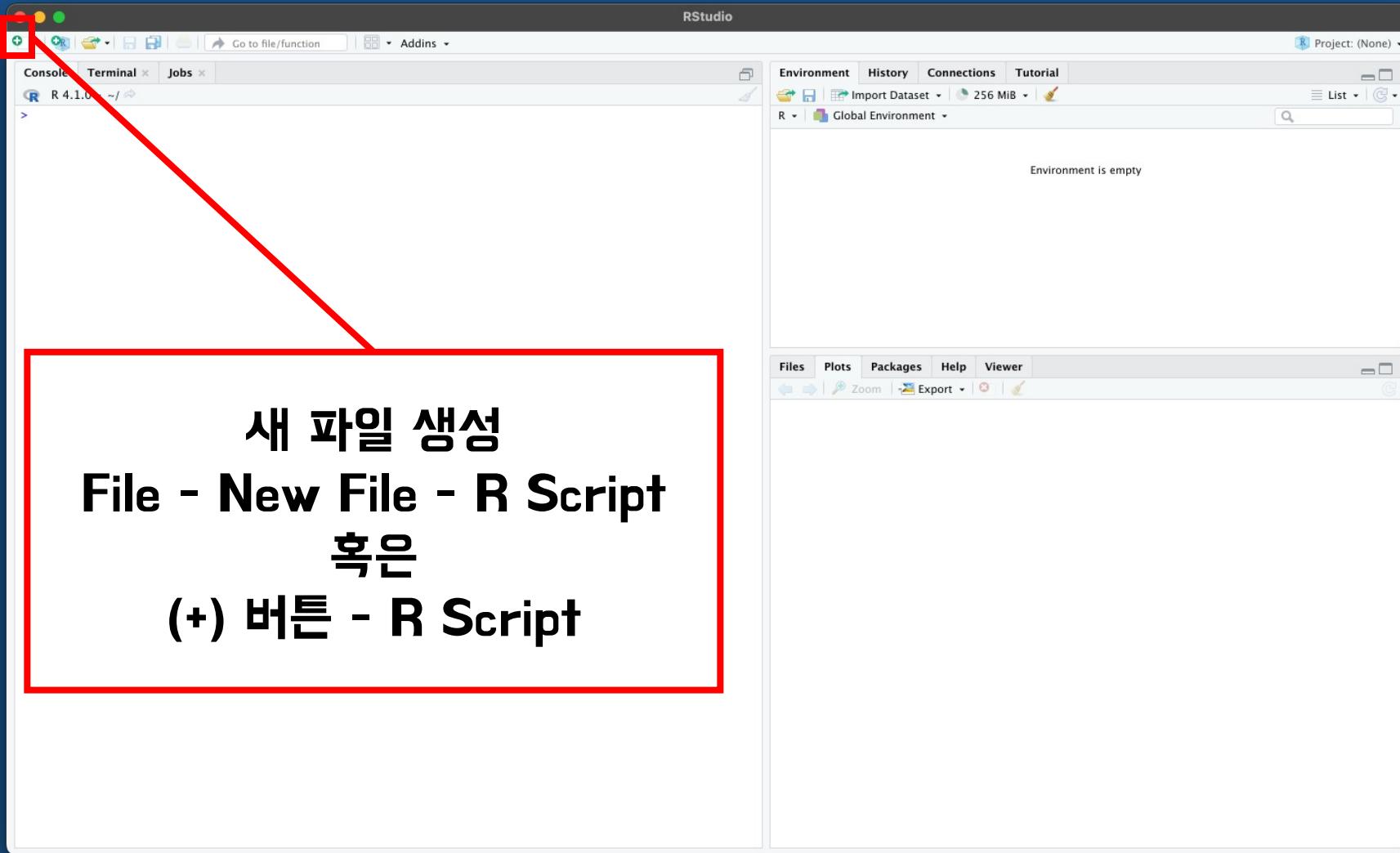
# R Studio 설치

`print("Hello  
World")`  
입력 후 엔터

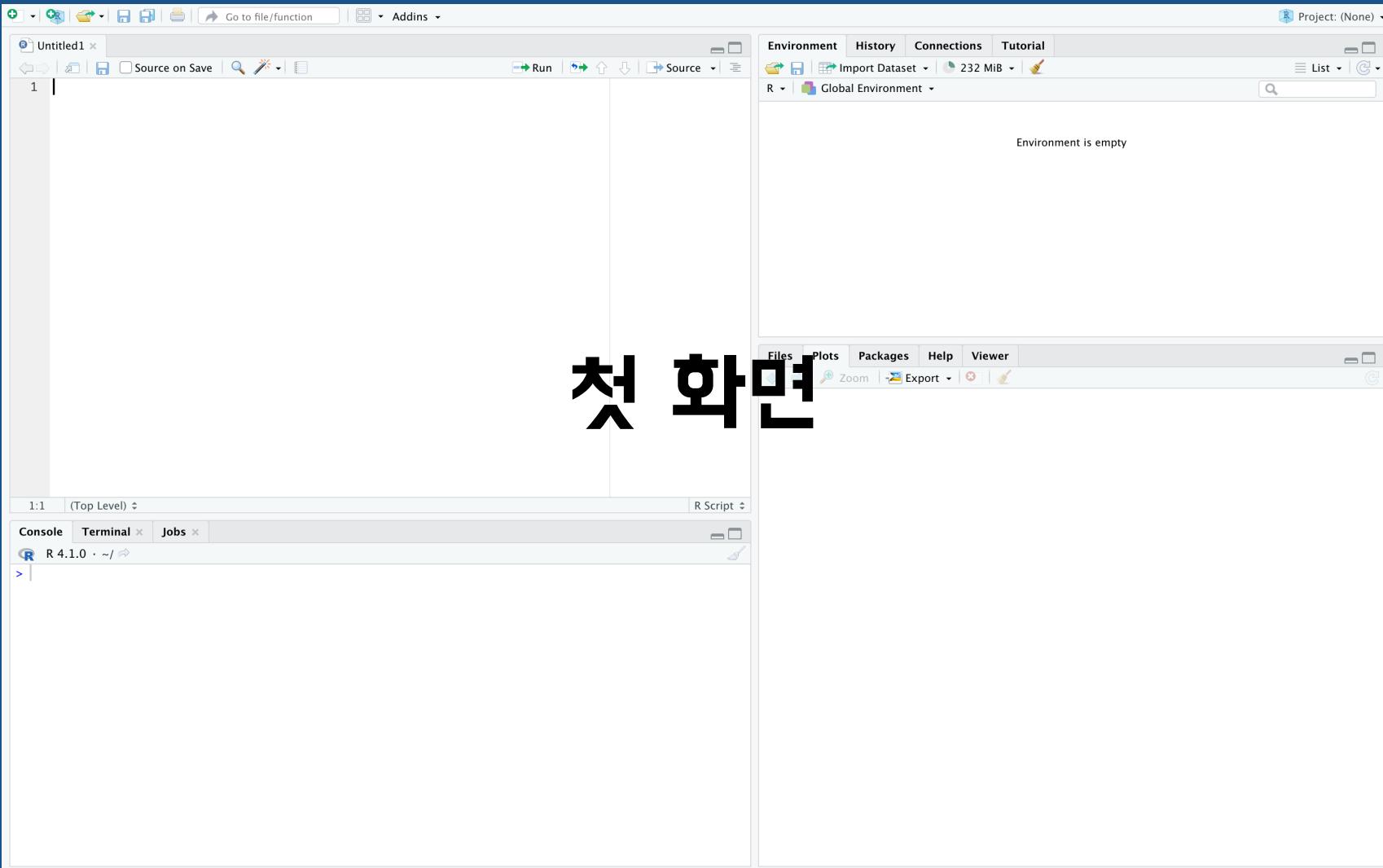
"Hello World"가  
출력되면 R과 R  
Studio 설치 완료



# R Studio Tutorial



# R Studio Tutorial



# R Studio Tutorial

The image shows the R Studio interface with four main sections highlighted by colored boxes:

- Code:** The top-left panel contains R code for reading a CSV file, calibrating radiocarbon ages, and plotting the results. A red box highlights this area.
- Data:** The top-right panel shows the Global Environment pane with three objects: BPdata (396 obs. of 14 variables), BPdata.caldates (List of 396), and BPdata.spd (List of 2). A green box highlights this area.
- Console:** The bottom-left panel shows the R console output for running the script. An orange box highlights this area.
- Graph:** The bottom-right panel displays a plot titled "SPD & Nomalization" showing Summed Probability versus Years BC/AD. The plot features a grey shaded area representing the probability distribution and a blue dashed line representing the calibration curve. A purple box highlights this area.

# R Studio Tutorial

The image shows a screenshot of the R Studio interface with four main components highlighted by arrows:

- Code:** The top-left pane shows R code for reading a CSV file, calibrating radiocarbon ages, and plotting the results. A stick figure icon is overlaid on this pane.
- Data:** The top-right pane shows the Global Environment with three objects: BPdata, BPdata.caldates, and BPdata.spd. A large green "Data" word is overlaid on this pane.
- Console:** The bottom-left pane shows the R console output for running the script. An orange-outlined icon of a head with gears is overlaid on this pane.
- Graph:** The bottom-right pane shows a plot titled "SPD & Nomalization" with "Suited Probability" on the y-axis and "Years BC/AD" on the x-axis. A purple "Graph" word is overlaid on this pane.

```
library(ggplot2)
library(rcarbon)
library(dplyr)

#Data
BPdata <- read.csv("/Users/jch/Desktop/SPDATA.csv")
BPdata.caldates <- calibrate(x=BPdata$BP, errors=BPdata$Error, calCurves='intcal20')
SPD
BPdata.spd <- spd(BPdata.caldates, timeRange=c(2200, 1300))
plot(BPdata.spd, calendar = "BCAD")
plot(BPdata.spd, runm=100, add=TRUE, calendar = "BCAD", type='simple', col="Navy", lwd=1.5, lty=2) +
  title("SPD & Nomalization")
```

R 4.1.0 · ~/Documents

```
> source("~/active-rstudio-document")
[1] "Calibrating radiocarbon ages..."
```

100%

```
[1] "Done."
[1] "Extracting and aggregating..."
[1] "Done."
```

100%

SPD & Nomalization

Suited Probability

Graph

Years BC/AD

# R Package 설치

- 패키지 설치 : Console 창에 아래의 명령어를 입력
  - > `install.packages('패키지명')`
- 패키지 사용 선언 : Code 창에 아래의 코드를 입력
  - > `library('패키지명')`
- Quiz.
  1. `ggplot2` 패키지를 설치하고 사용 선언을 해주세요.
  2. `dplyr` 패키지를 설치하고 사용 선언을 해주세요.