香港中文大學
The Chinese University of Hong Kong

ENGG1004N/K
Digital Literacy and Computational Thinking

Installation Guide of R/RStudio

Term 2, 2024-25

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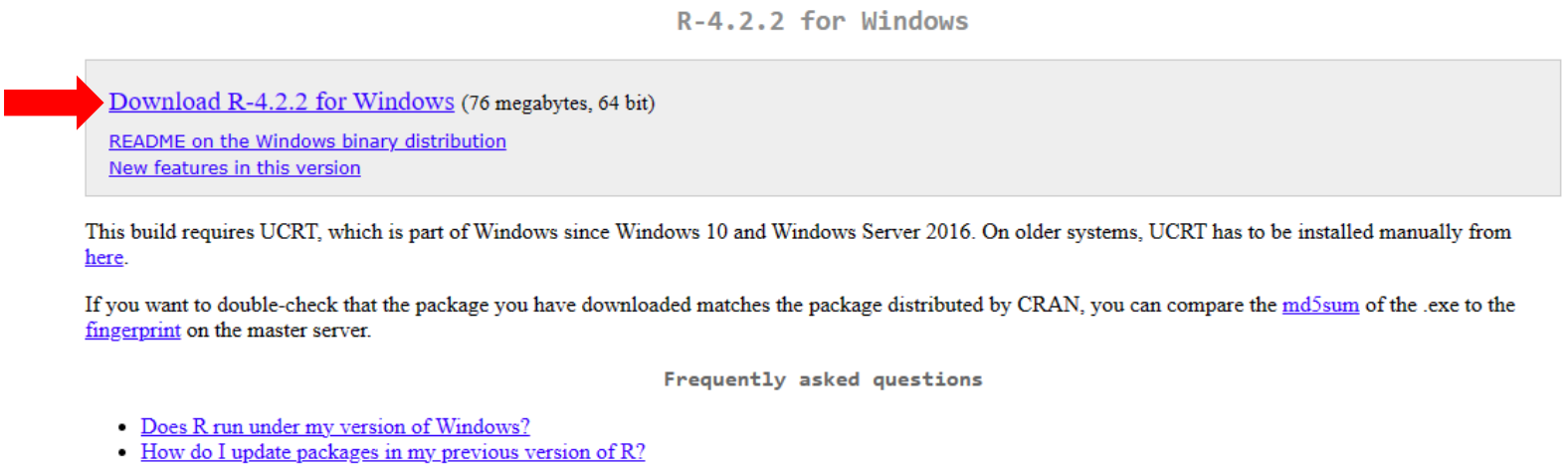
Background

- Some of our lab exercises requires you to use the R language
- To use R in your computer, you need to install two software tools
  - R https://cloud.r-project.org/
  - RStudio Desktop http://www.rstudio.com/
- The following slides illustrate the detailed setup steps for both Windows (p.3–15) and macOS (p.16–28) platforms

Install R on Windows

- Go to: https://cloud.r-project.org
  - → Click "Download R for Windows"
  - → Click "base"



R-4.2.2 for Windows

Download R-4.2.2 for Windows (76 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.

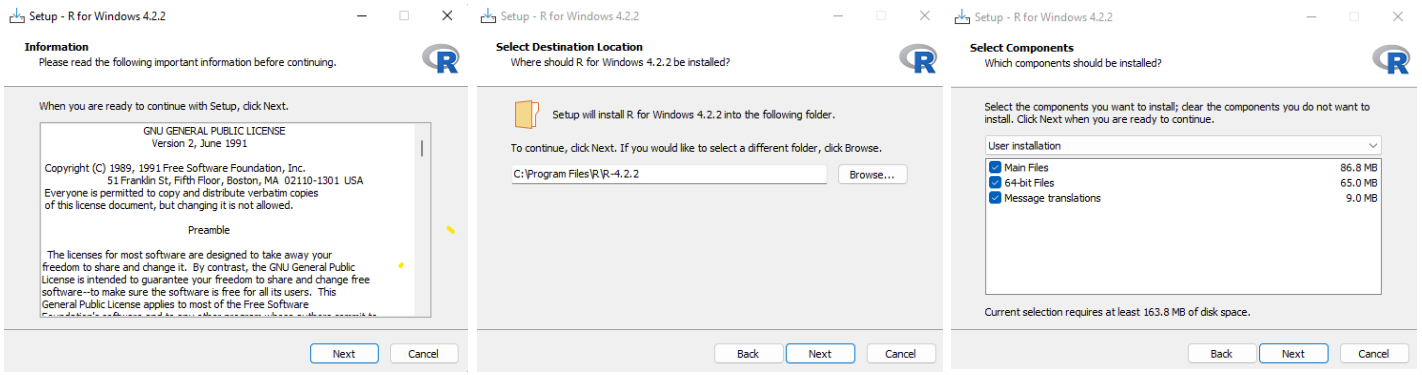
If you want to double-check that the package you have downloaded matches the package distributed by CRAN, you can compare the md5sum of the .exe to the fingerprint on the master server.

Frequently asked questions

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

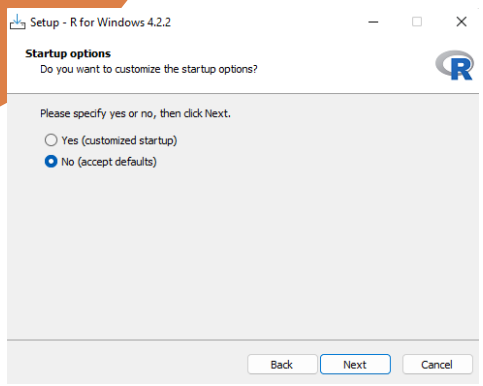
Install R on Windows

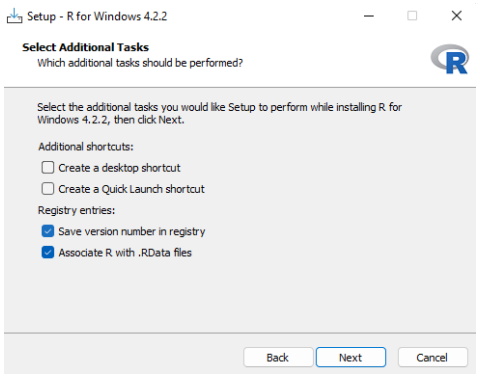
- Open the downloaded exe file
- Install: Press next

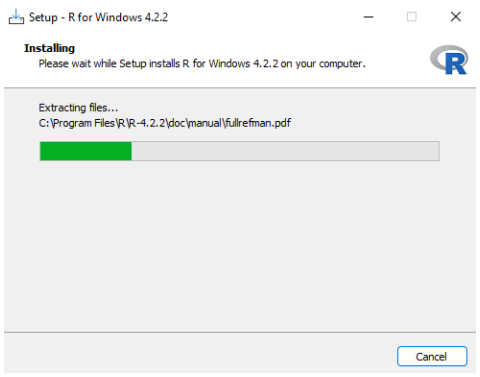


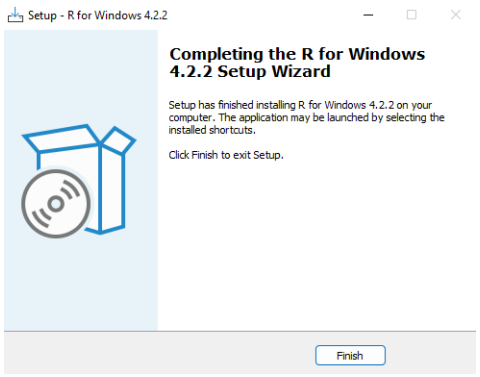
Install R on Windows

- Install: Press next



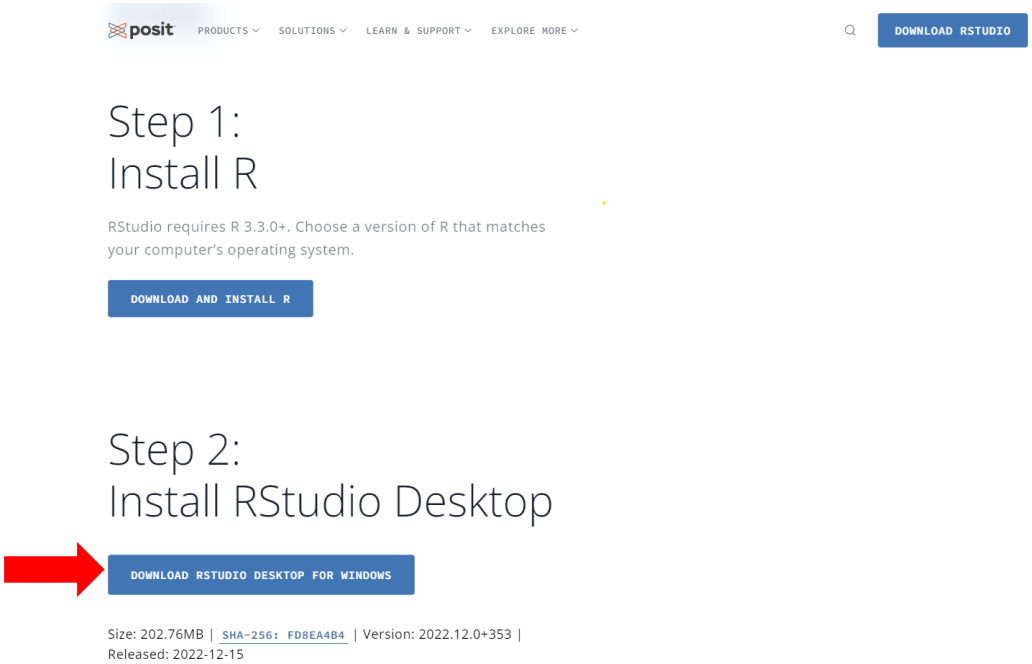






Install RStudio on Windows

- Go to: http://www.rstudio.com/download



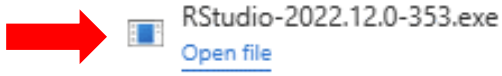
Install RStudio on Windows

Step 2:
Install RStudio Desktop

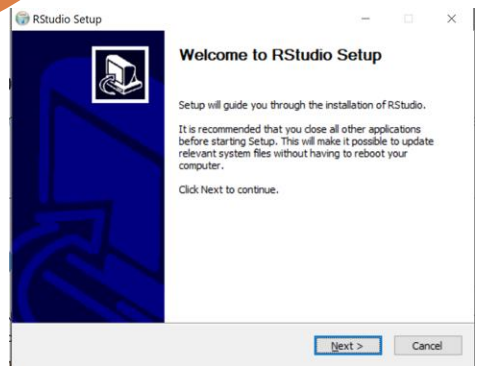
DOWNLOAD RSTUDIO DESKTOP FOR WINDOWS

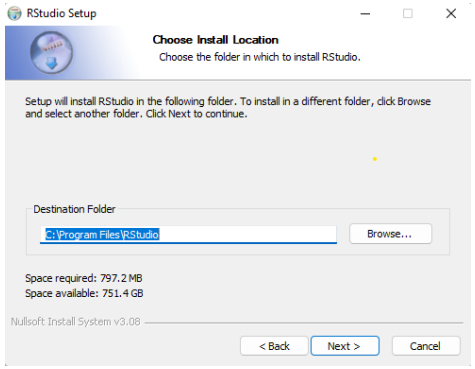
Size: 202.76MB | SHA-256: FD8EA4B4 | Version: 2022.12.0+353 |
Released: 2022-12-15

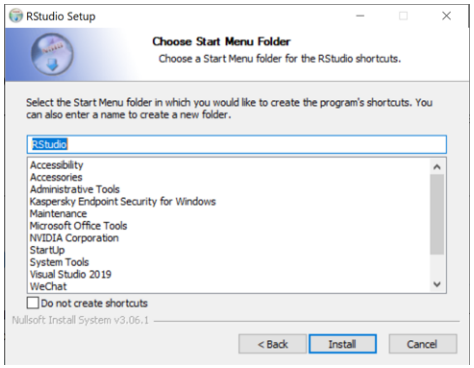
Install RStudio on Windows

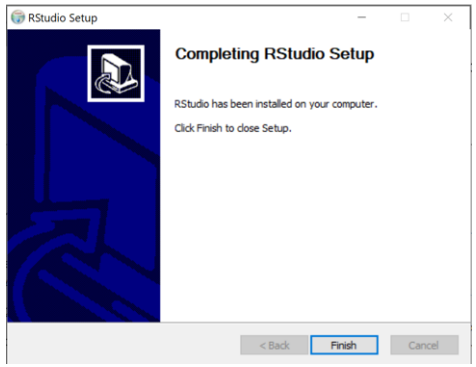
- Open file: 

- Install: Press next



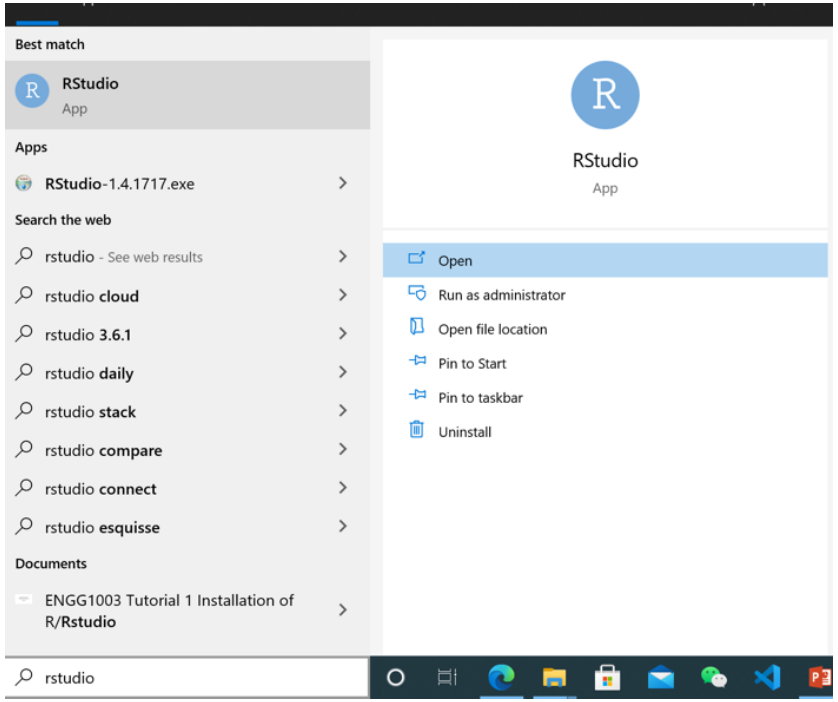






Install RStudio on Windows

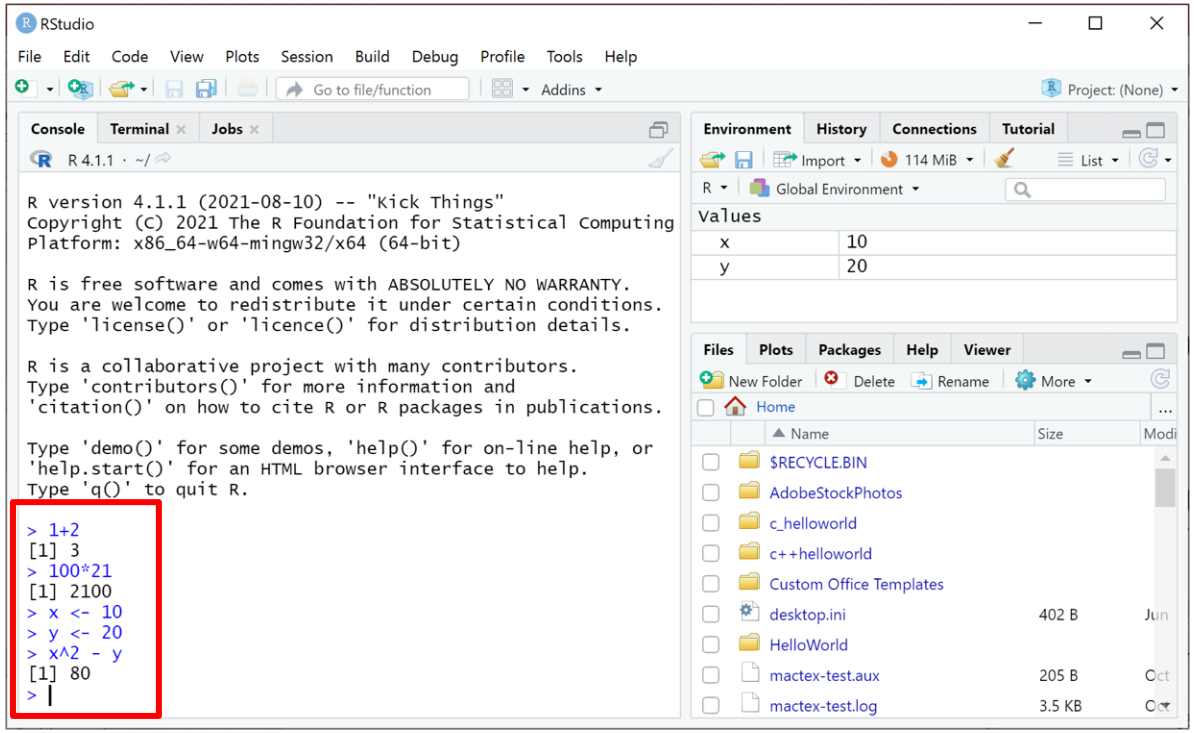
- Open “RStudio” (Not R!)



Run RStudio on Windows

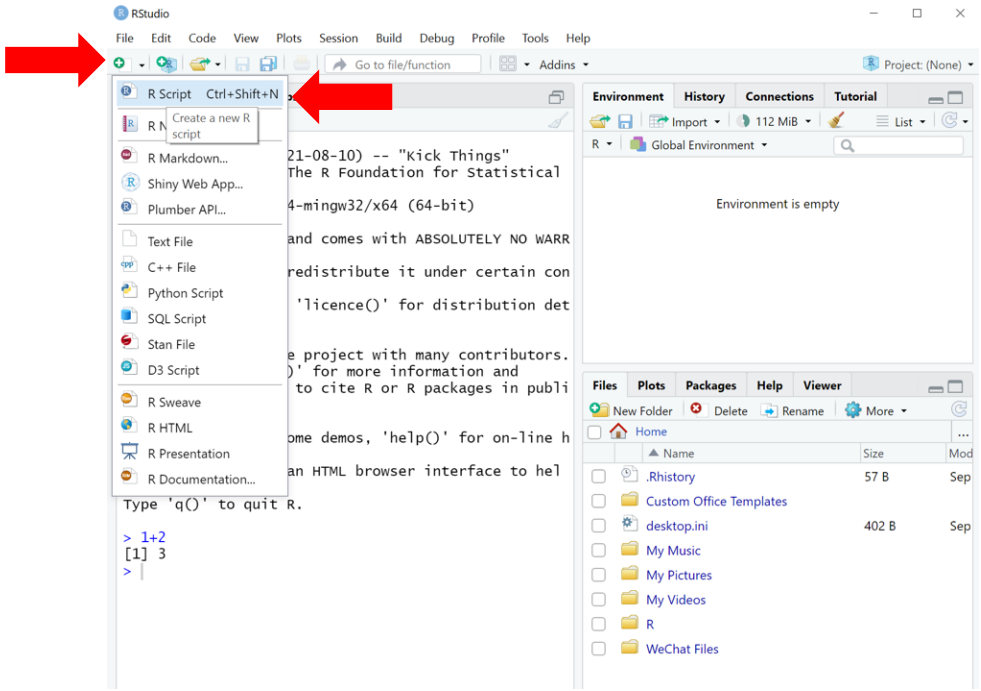
- The ">" symbol is the prompt. You can put the cursor there to type commands
- Try some toy examples:

```
1+2
100*21
x <- 10
y <- 20
x^2 - y
```



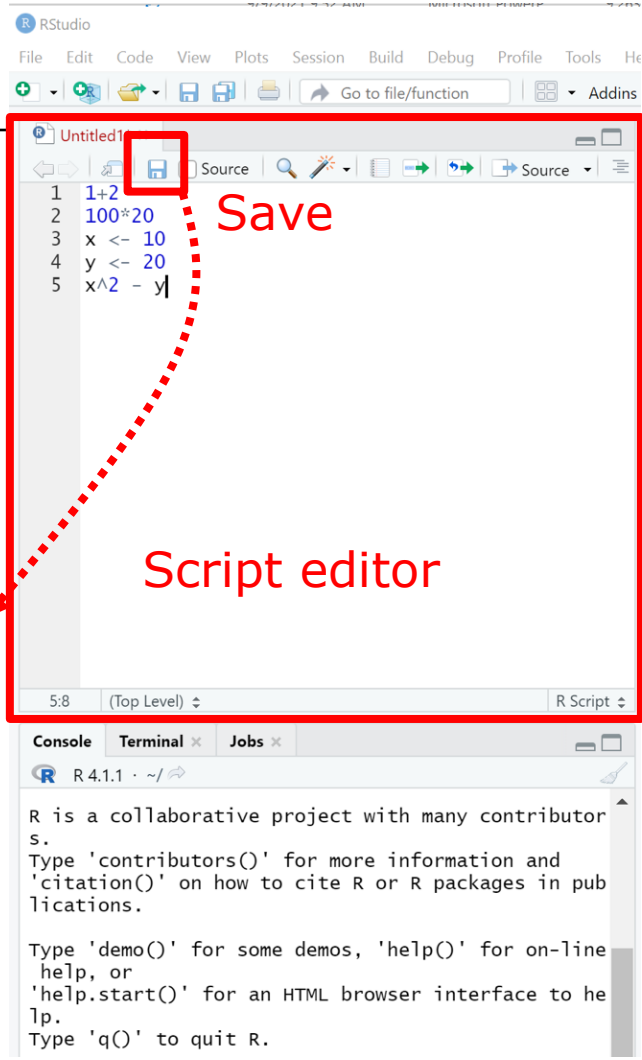
R Script

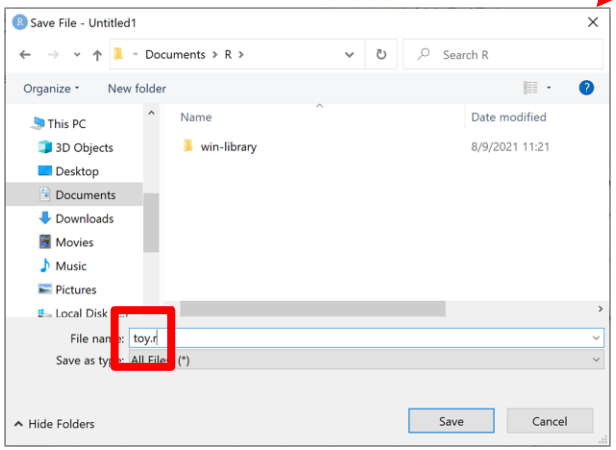
- As you get more and more commands, it's better to save all your commands in a *script file*
- Click "New File" → "R Script"



R Script

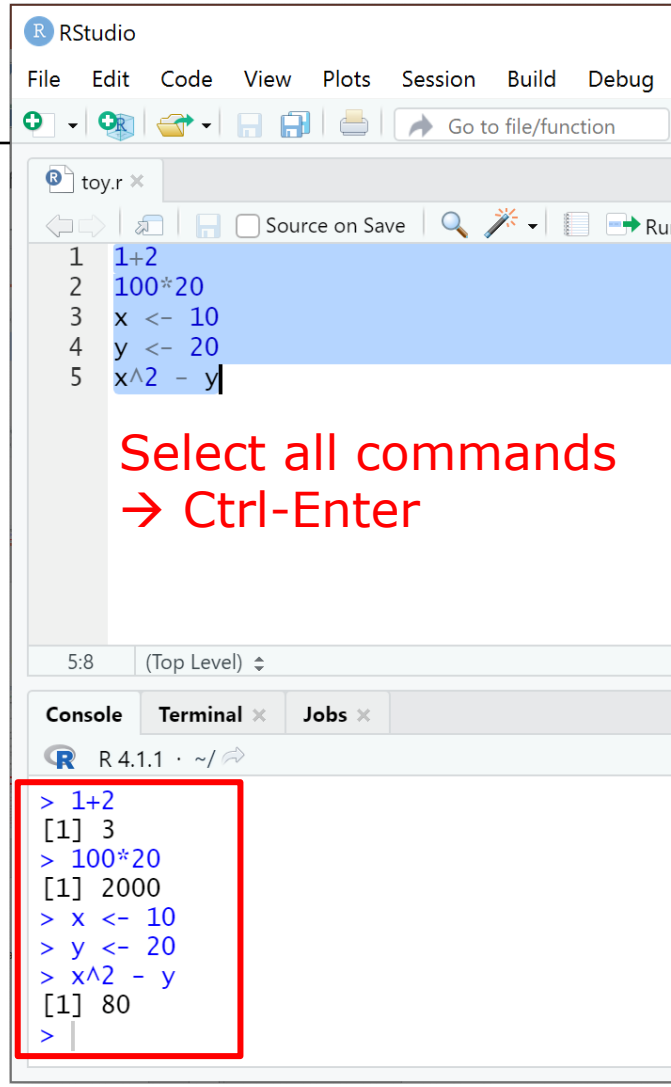
- You can now put all your commands into the script editor
- To save your commands, click the "Save" icon
  - Name your script file toy.R
  - Remember the folder that you save the file in





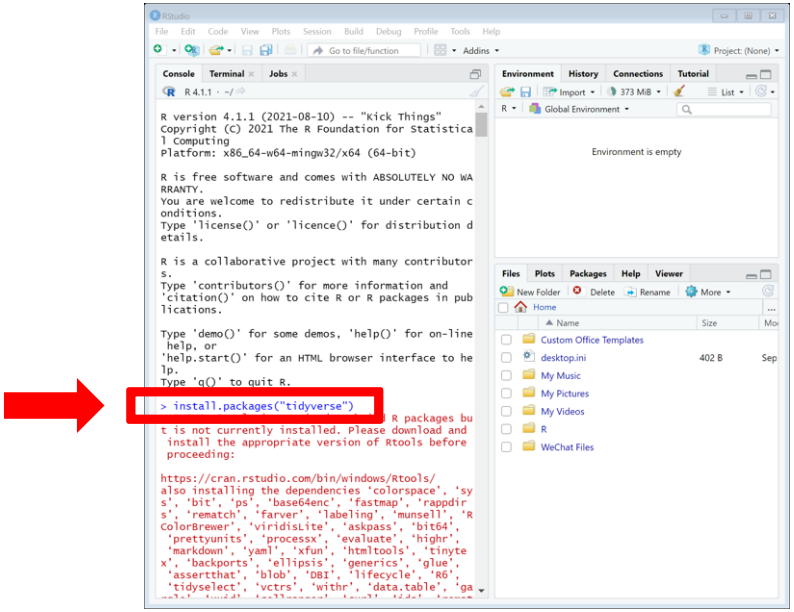
Running R Script

- To run an R script:
  - Select all commands in the script editor → Control-Enter



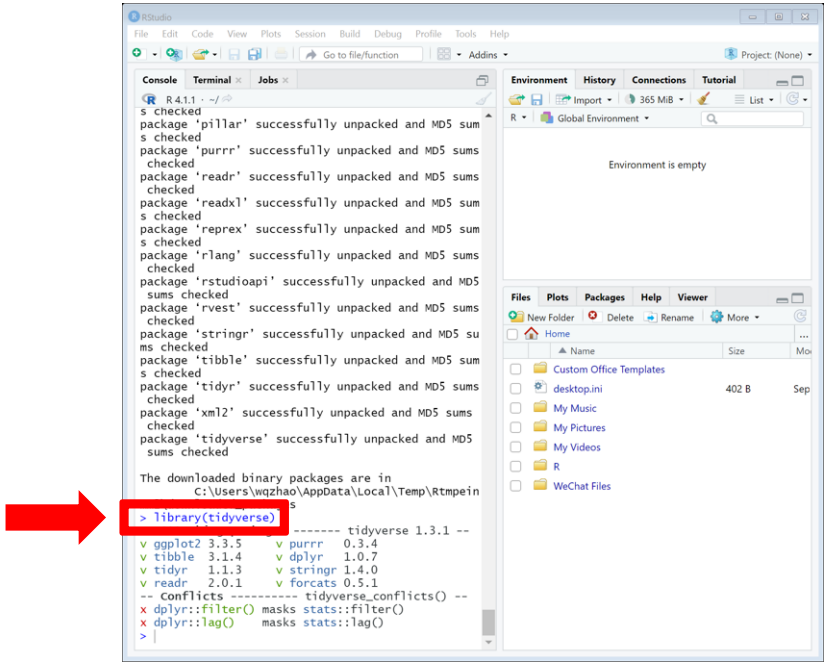
Install R Packages

- Other than the basic R, we sometimes need to use more R tools called *packages*
- Some packages have to be installed separately
- Try to install an R package:
  - Type in: `install.packages("tidyverse")`



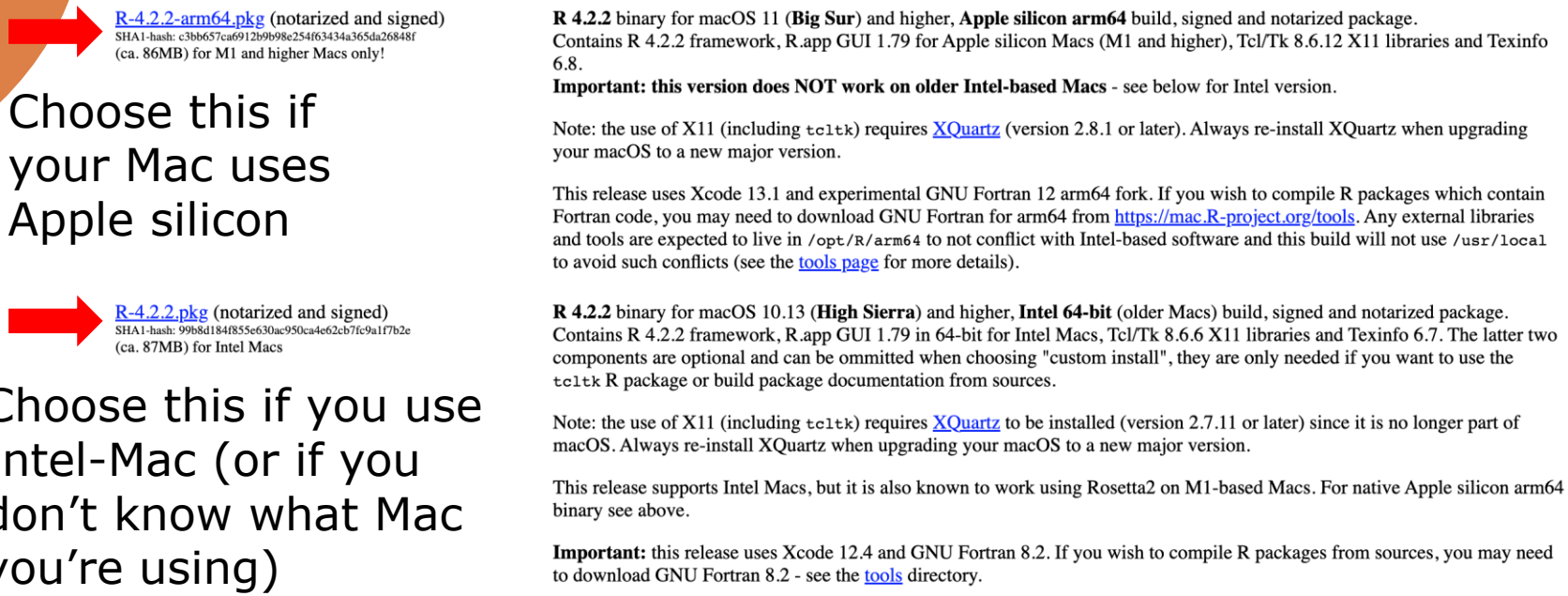
Load R Packages

- After installing the package, we need to load the package to use it
  - Type in: `library(tidyverse)`



Install R on Mac

- Go to: https://cloud.r-project.org → Click "Download R for macOS"



Latest release:

R-4.2.2-arm64.pkg (notarized and signed)
SHA1-hash: c3bb657ca6912b9b98e254f63434a365da26848f
(ca. 86MB) for M1 and higher Macs only!

R 4.2.2 binary for macOS 11 (**Big Sur**) and higher, **Apple silicon arm64** build, signed and notarized package.
Contains R 4.2.2 framework, R.app GUI 1.79 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 - see below for Intel version.

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 packages which contain Fortran code, you may need to download GNU Fortran for arm64 from https://mac.R-project.org/tools. Any external libraries and tools are expected to live in `/opt/R/arm64` to not conflict with Intel-based software and this build will not use `/usr/local` to avoid such conflicts (see the tools page for more details).

Choose this if your Mac uses Apple silicon

R-4.2.2.pkg (notarized and signed)
SHA1-hash: 99b8d184f855e630ac950ca4e62cb7fc9a1f7b2e
(ca. 87MB) for Intel Macs

R 4.2.2 binary for macOS 10.13 (**High Sierra**) and higher, **Intel 64-bit** (older Macs) build, signed and notarized package.
Contains R 4.2.2 framework, R.app GUI 1.79 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 ommitted 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.

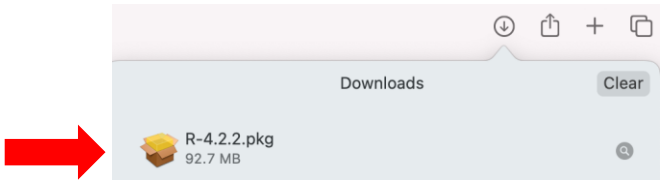
This release supports Intel Macs, but it is also known to work using Rosetta2 on M1-based Macs. For native Apple silicon arm64 binary see above.

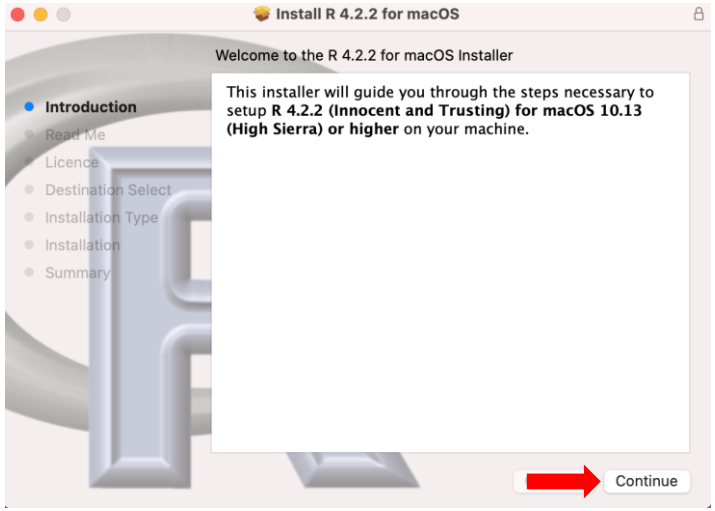
Important: this release uses Xcode 12.4 and GNU Fortran 8.2. If you wish to compile R packages from sources, you may need to download GNU Fortran 8.2 - see the tools directory.

Choose this if you use Intel-Mac (or if you don't know what Mac you're using)

Install R on Mac

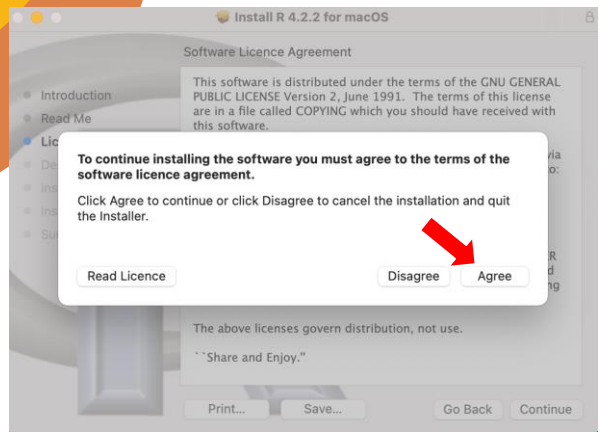
- Install R:

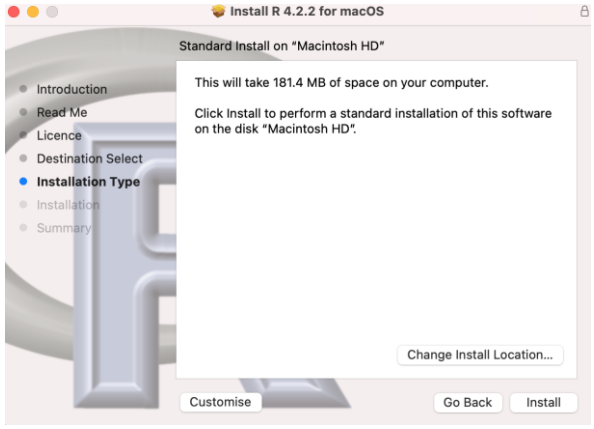


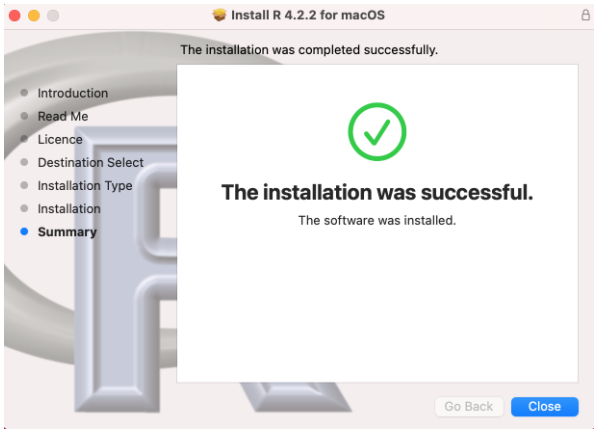


Install R on Mac

- Press continue and agree

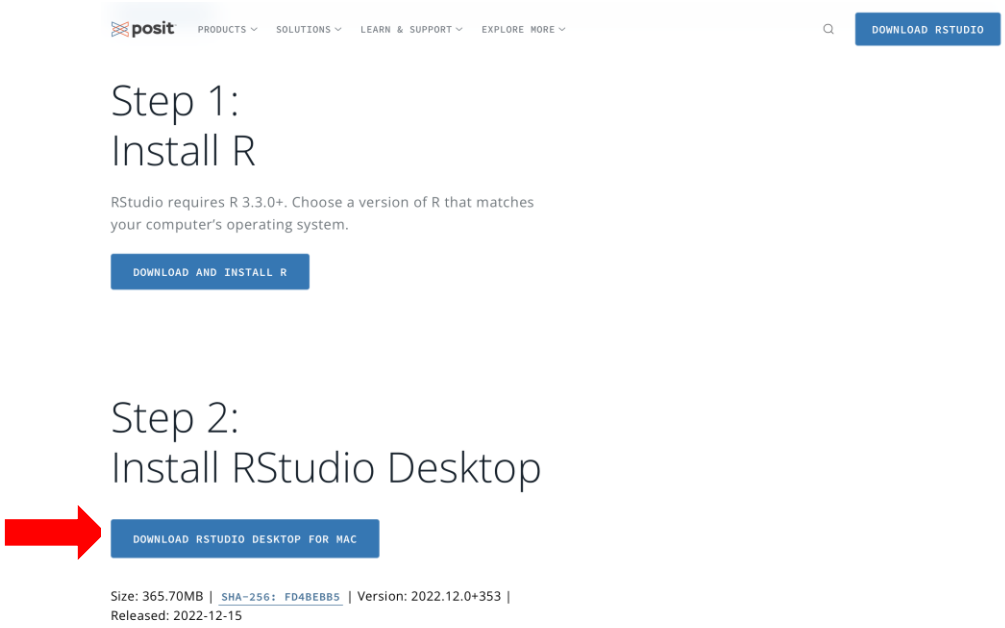






Install RStudio on Mac

- Go to: http://www.rstudio.com/download



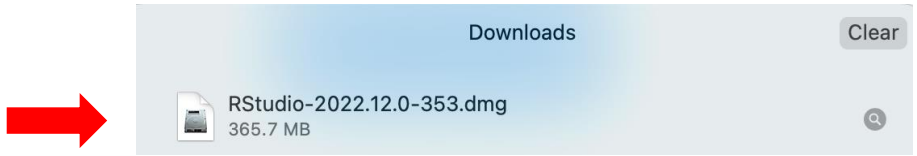
Install RStudio on Mac

Step 2:
Install RStudio Desktop

Size: 365.70MB | SHA-256: FD4BEBB5 | Version: 2022.12.0+353 |
Released: 2022-12-15

Install RStudio on Mac

- Install RStudio

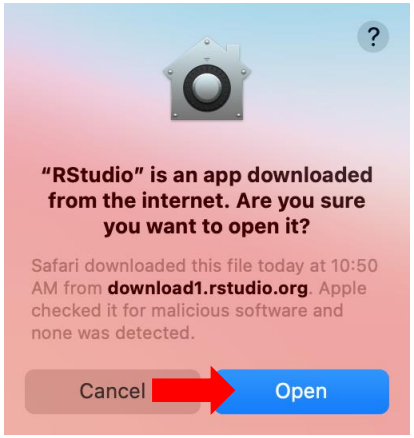


- Drag the "RStudio" icon to "Applications"

Install RStudio on Mac

- You can now see both R and RStudio in the Launchpad

- Open "RStudio" (Not R!)



Run RStudio on Mac

- The ">" symbol is the prompt. You can put the cursor there to type commands
- Try some toy examples:

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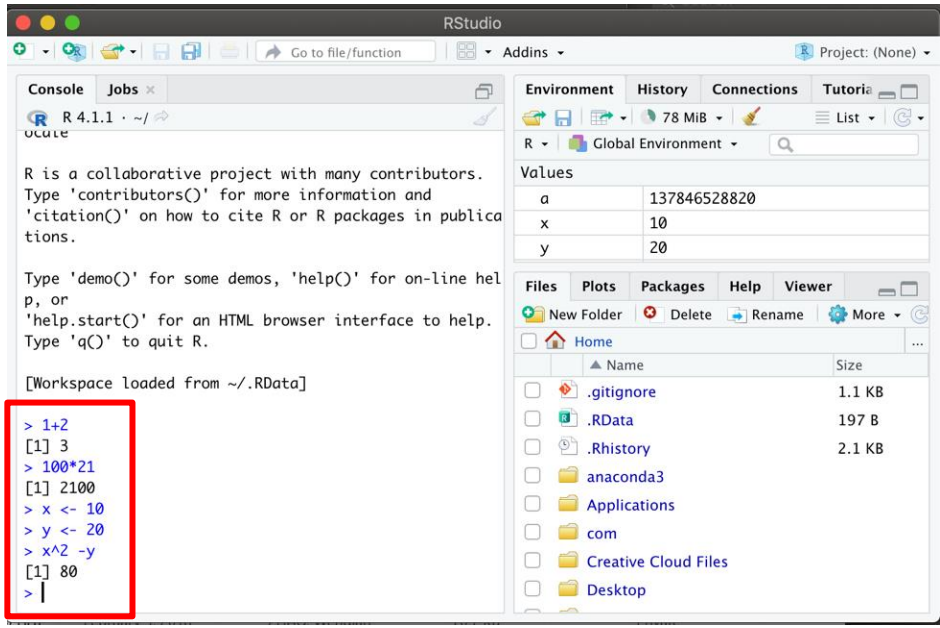
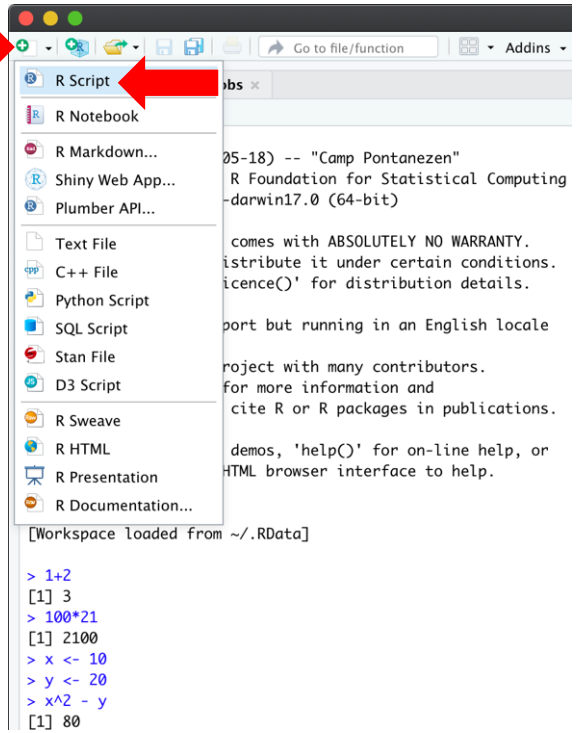


R Script

- As you get more and more commands, it's better to save all your commands in a *script file*
- Click "New File" → "R Script"



R Script

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- To save your commands, click the "Save" icon
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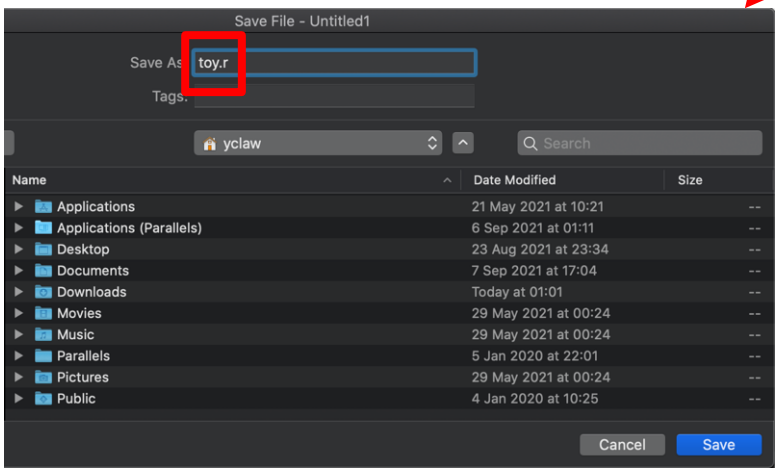
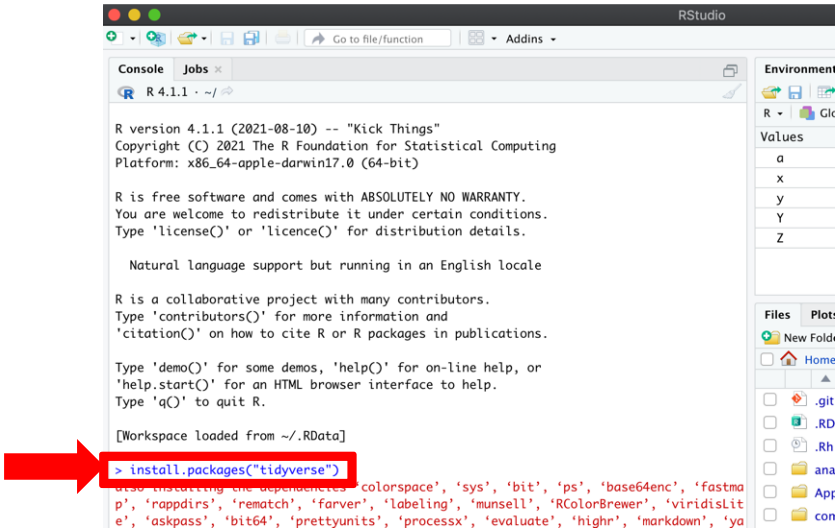


Running R Script

- To run an R script:
  - Select all commands in the script editor → ⌘-Enter (Command-Enter)

Install R Packages

- Other than the basic R, we sometimes need to use more R tools called *packages*.
- Some packages have to be installed separately
- Try to install a R package:
  - Type in: `install.packages("tidyverse")`
- If you are using M1/M2 series Mac, type this instead:
  - `install.packages("tidyverse", dependencies = TRUE)`



Load R Packages

- After installing the package, we need to load the package to use it
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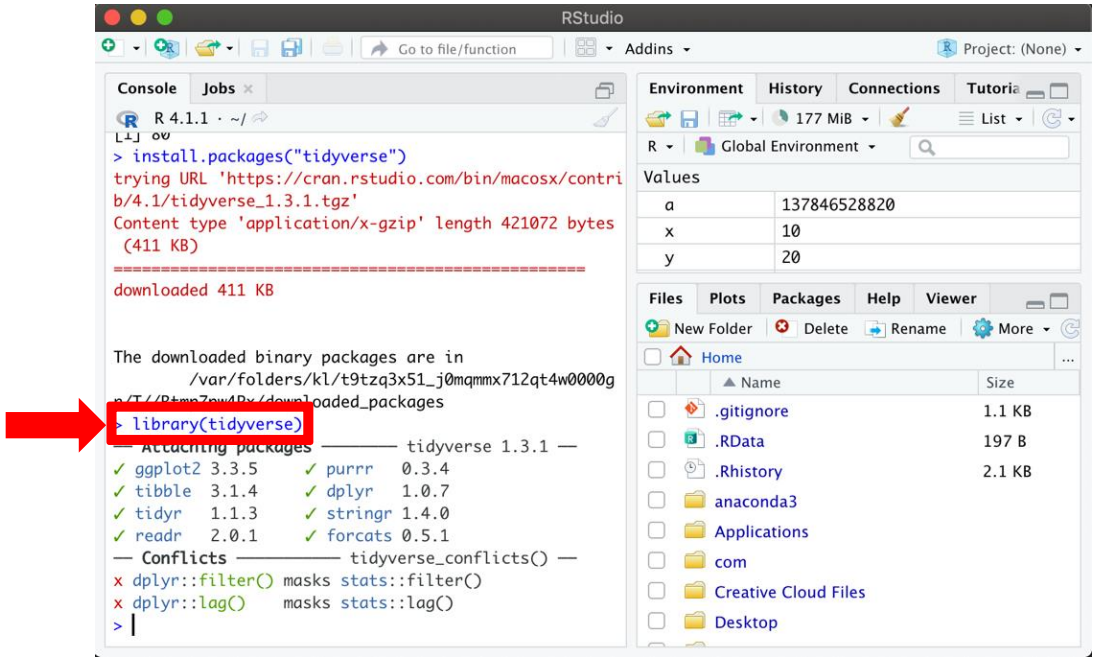

Questions?

- Next: Proceed to read the Lab 01 specification and try out the exercises!

- Thank you!