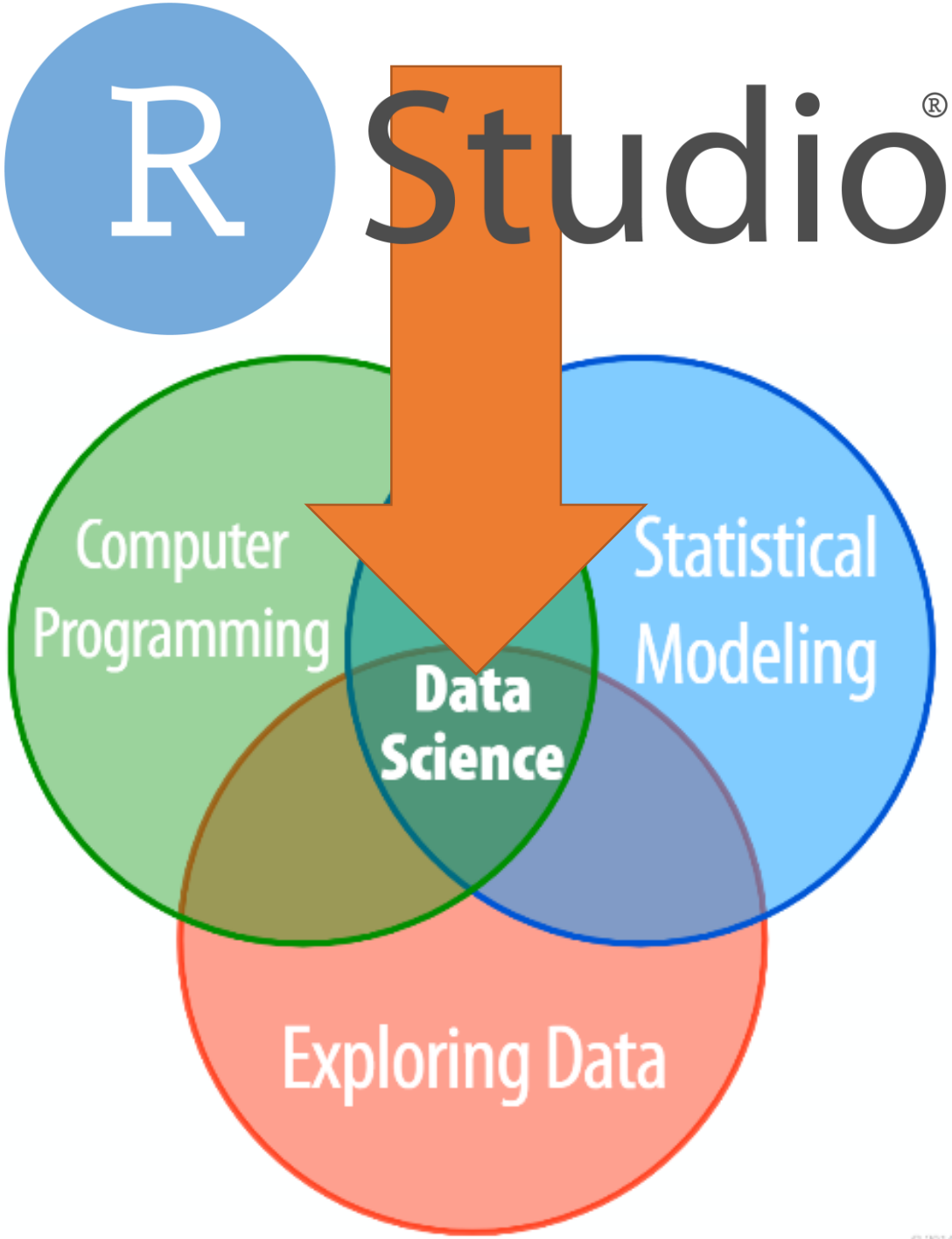
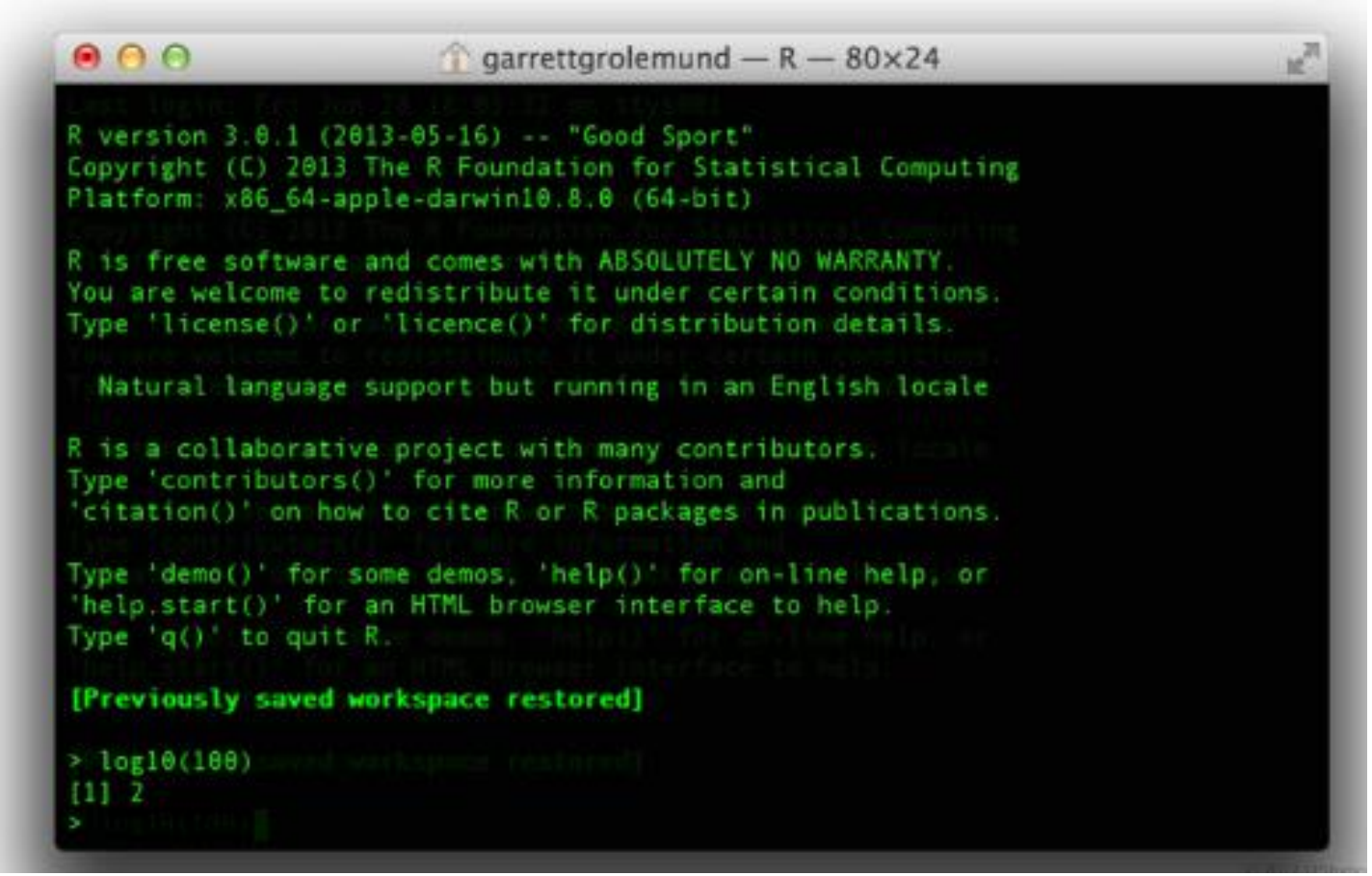
Introduction to using RStudio

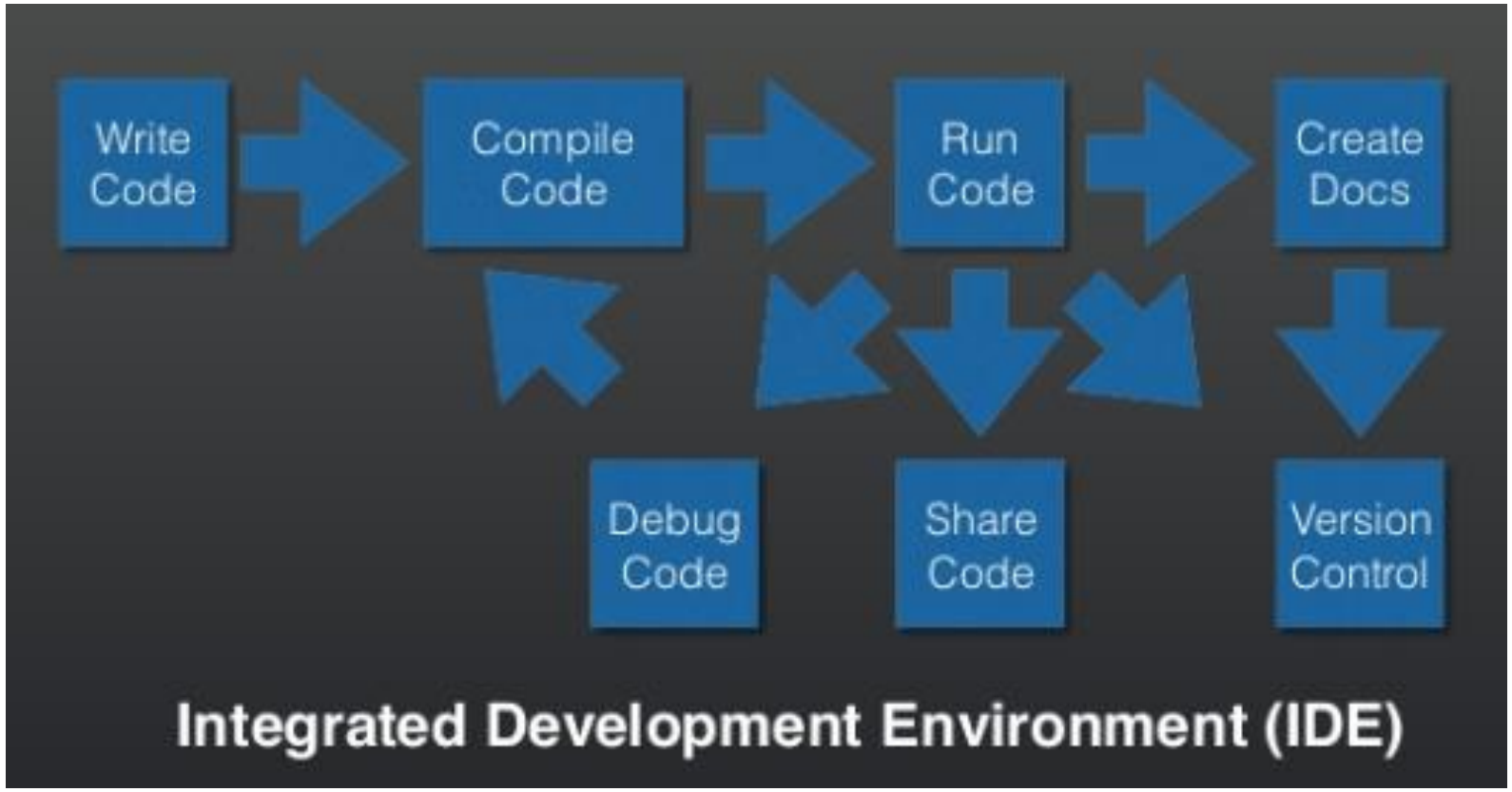
Nathan Green, David Jorgensen


R Studio®
Computer Programming
Statistical Modeling
Data Science
Exploring Data

R can be run without Rstudio…but we don't recommend it!



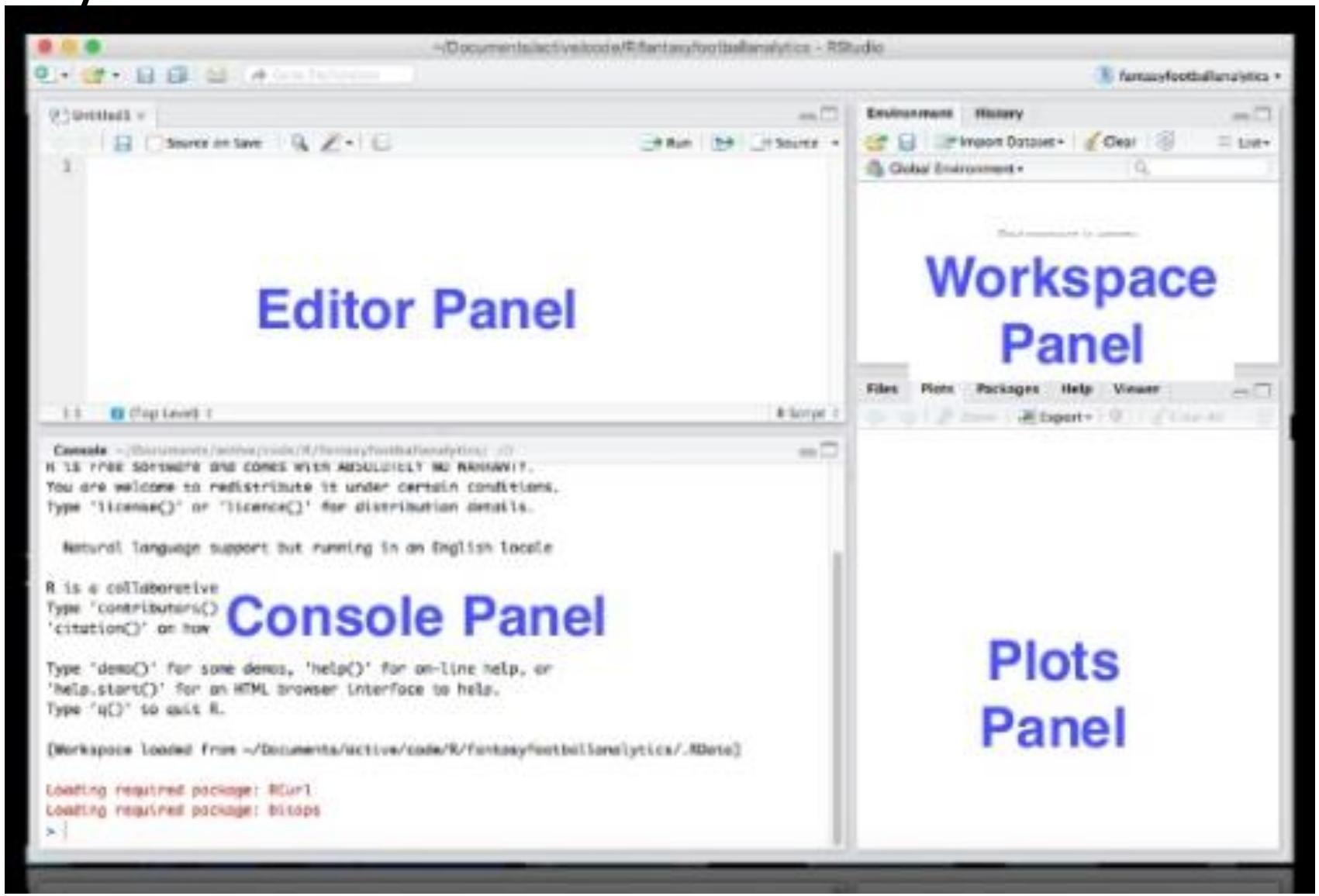
IDEs


Write Code
Compile Code
Run Code
Create Docs
Debug Code
Share Code
Version Control
Integrated Development Environment (IDE)

Version of RStudio

Feature	RStudio Desktop	RStudio Server	RStudio Server Pro
License	AGPL	AGPL	RStudio License
Price	Free/$995	Free	$9,995/server/yr
Full IDE	✓	✓	✓
Remote Access		✓	✓
Load Balancing			✓
Shiny Integration	✓	✓	✓
Group Admin Tools			✓
Security Tools			✓
Monitoring Tools			✓

RStudio layout

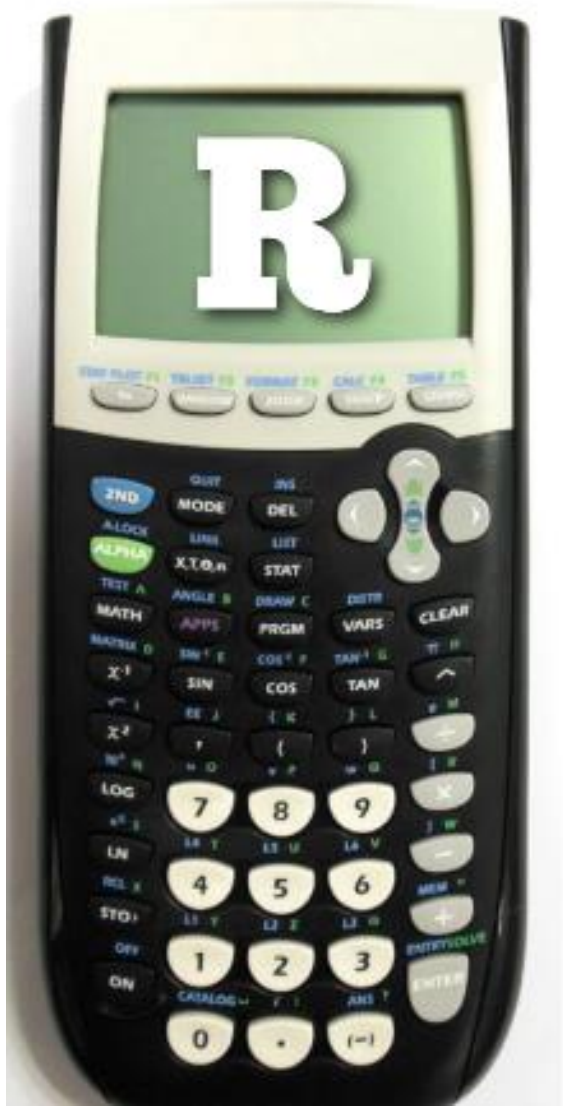


Scripts

- Editor Panel
  - Text file with R commands
- .R extension

Console

- Command prompt
- Type commands here execute straight away
- Starts with > sign (know at the prompt)
- When you hit enter the output will be displayed below
- As you enter commands you accumulate a history of past commands



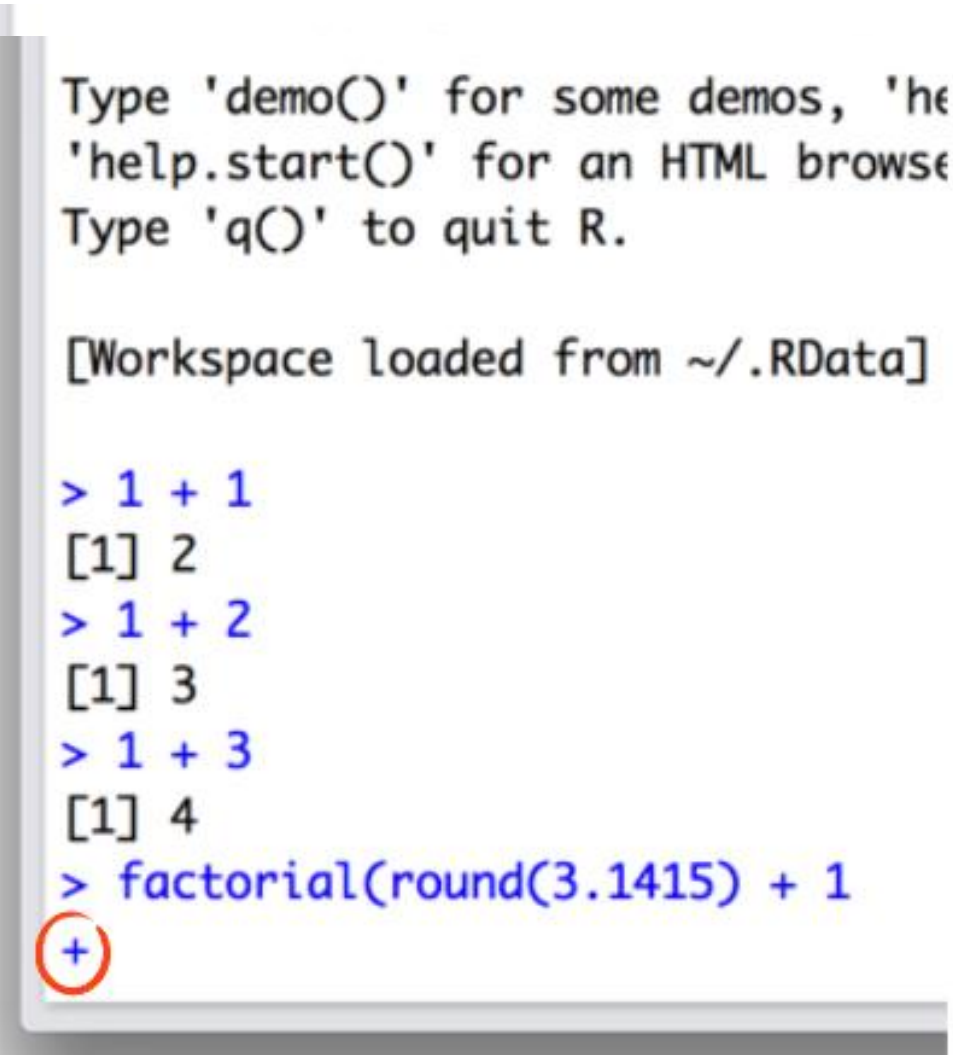
R is like a fancy calculator on your computer

```
5 + 5
# 10

4 - 1
# 3

1 * 2
# 2

4 ^ 2
# 16
```

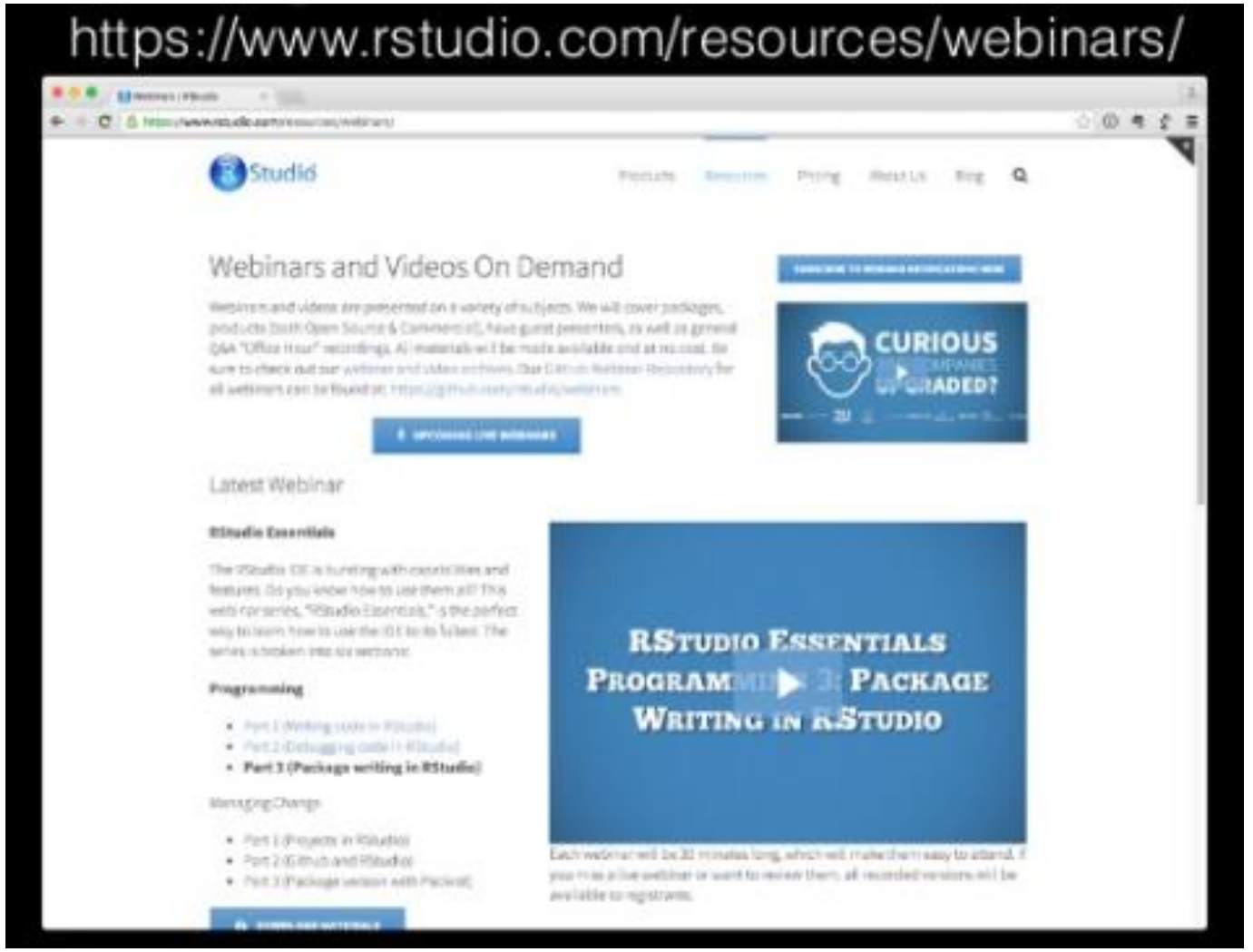
+ prompt

If your prompt turns into a "+", R thinks you haven't finished your previous command.

Either finish the command, or press escape.



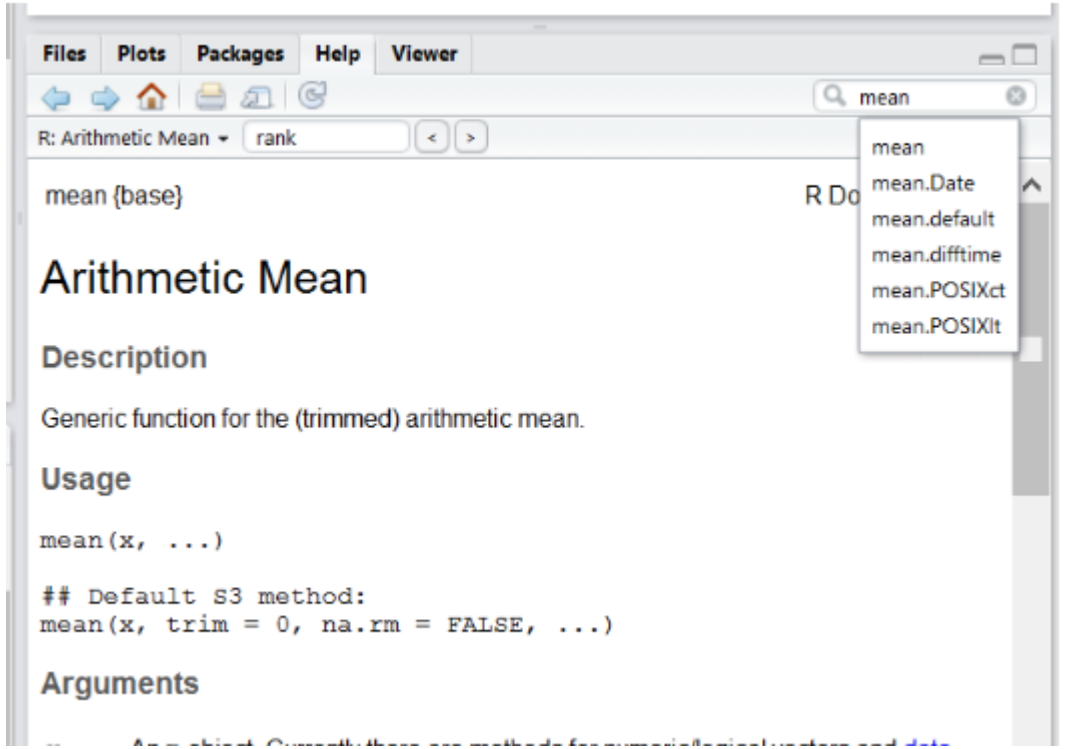
Help and Tutorials



Getting help at the console

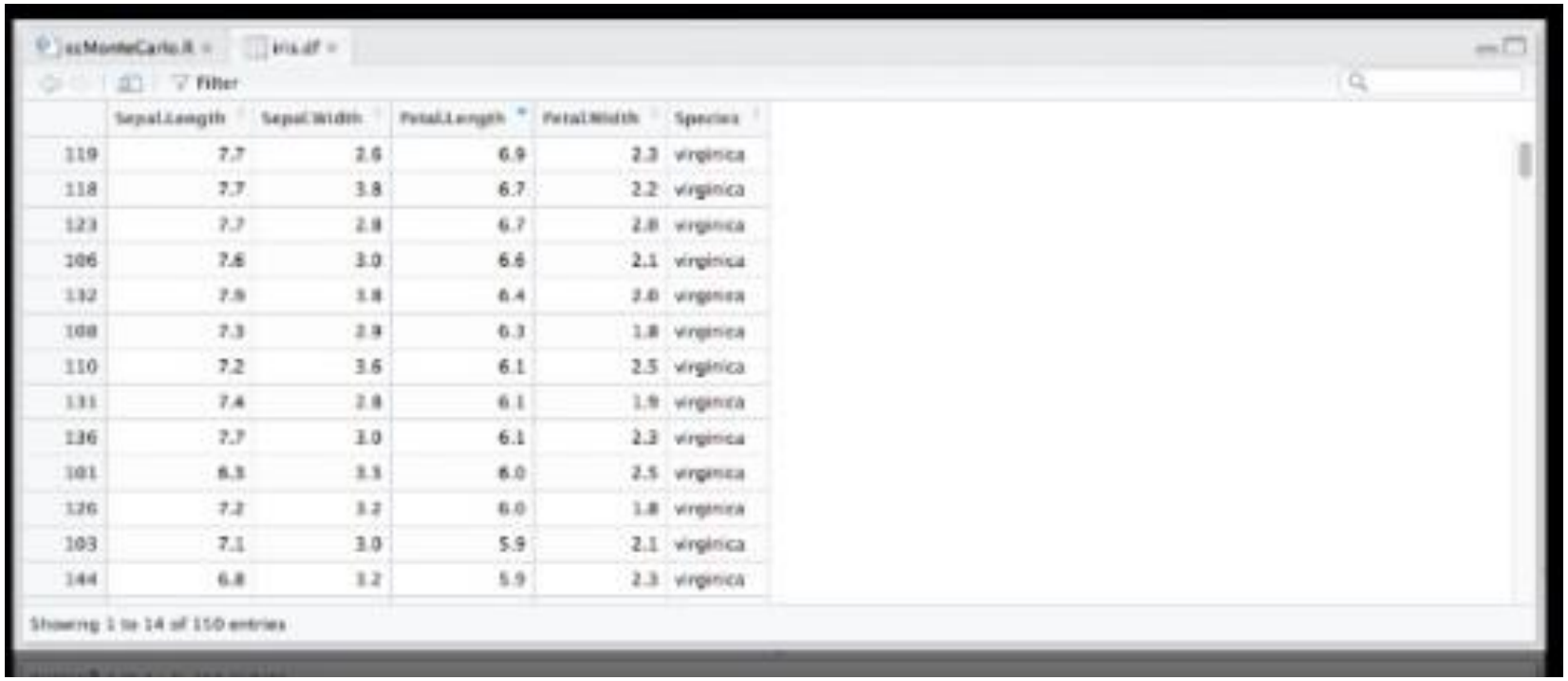
- Several different ways to access help files

- help(<name>)
- ?<name>
- F1
- Help tab search

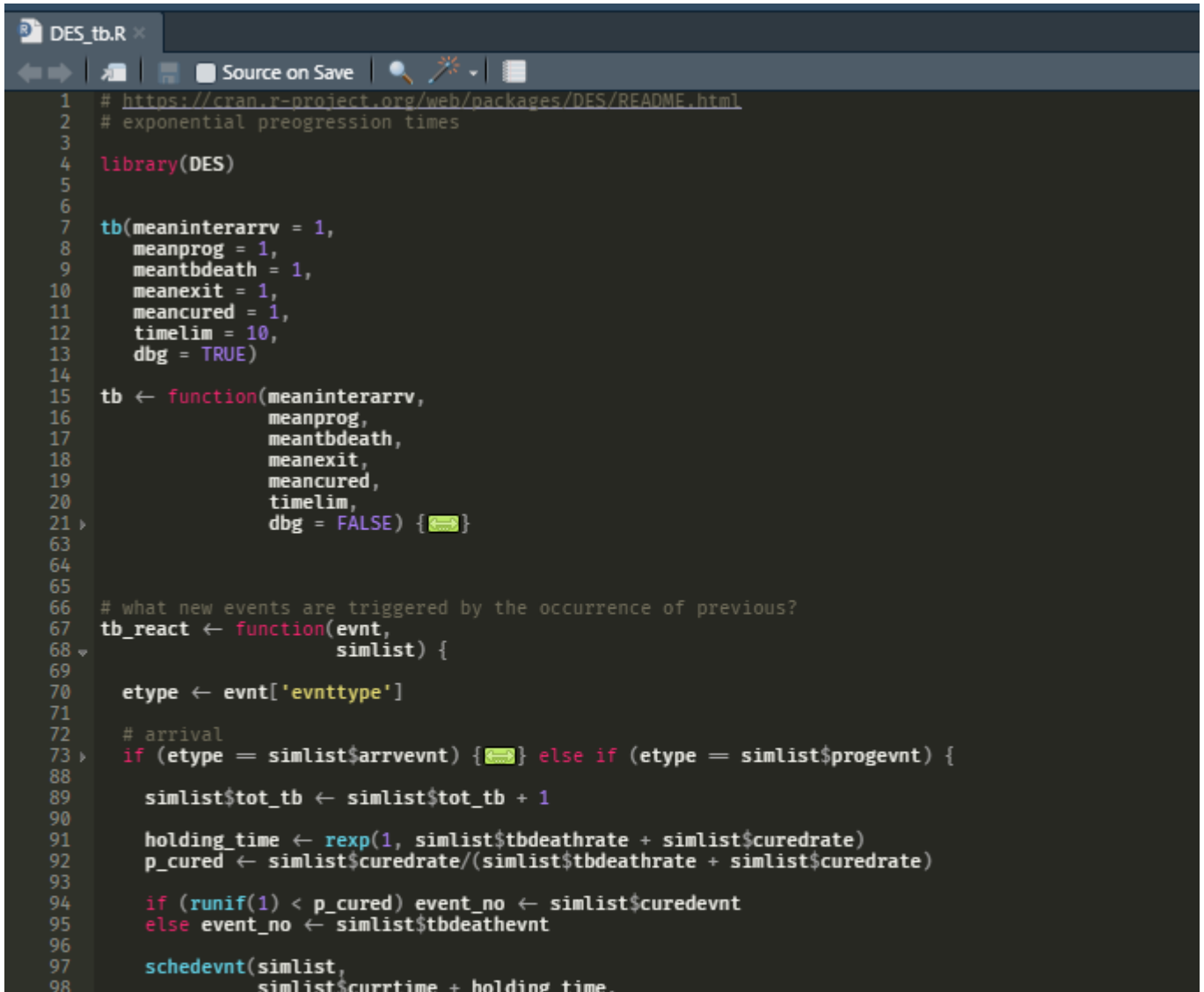


Viewer

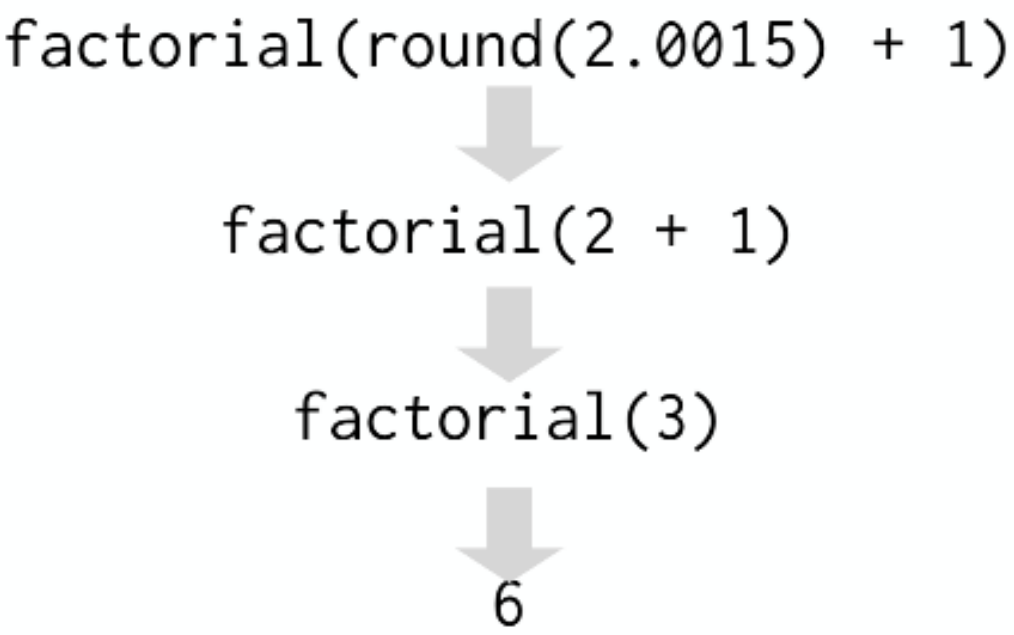
- Real time view of data
- Filter, sort and search



Syntax highlighting, navigation

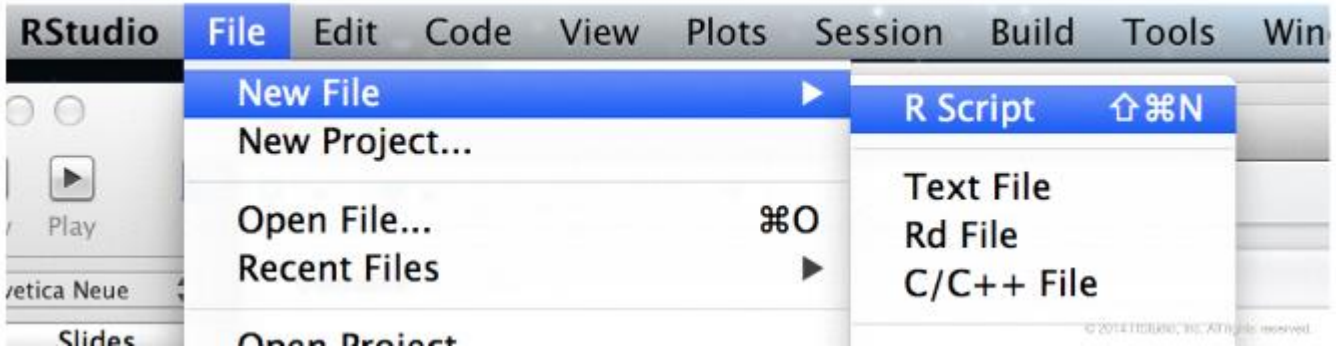


- R always works from the innermost parenthesis to the outermost



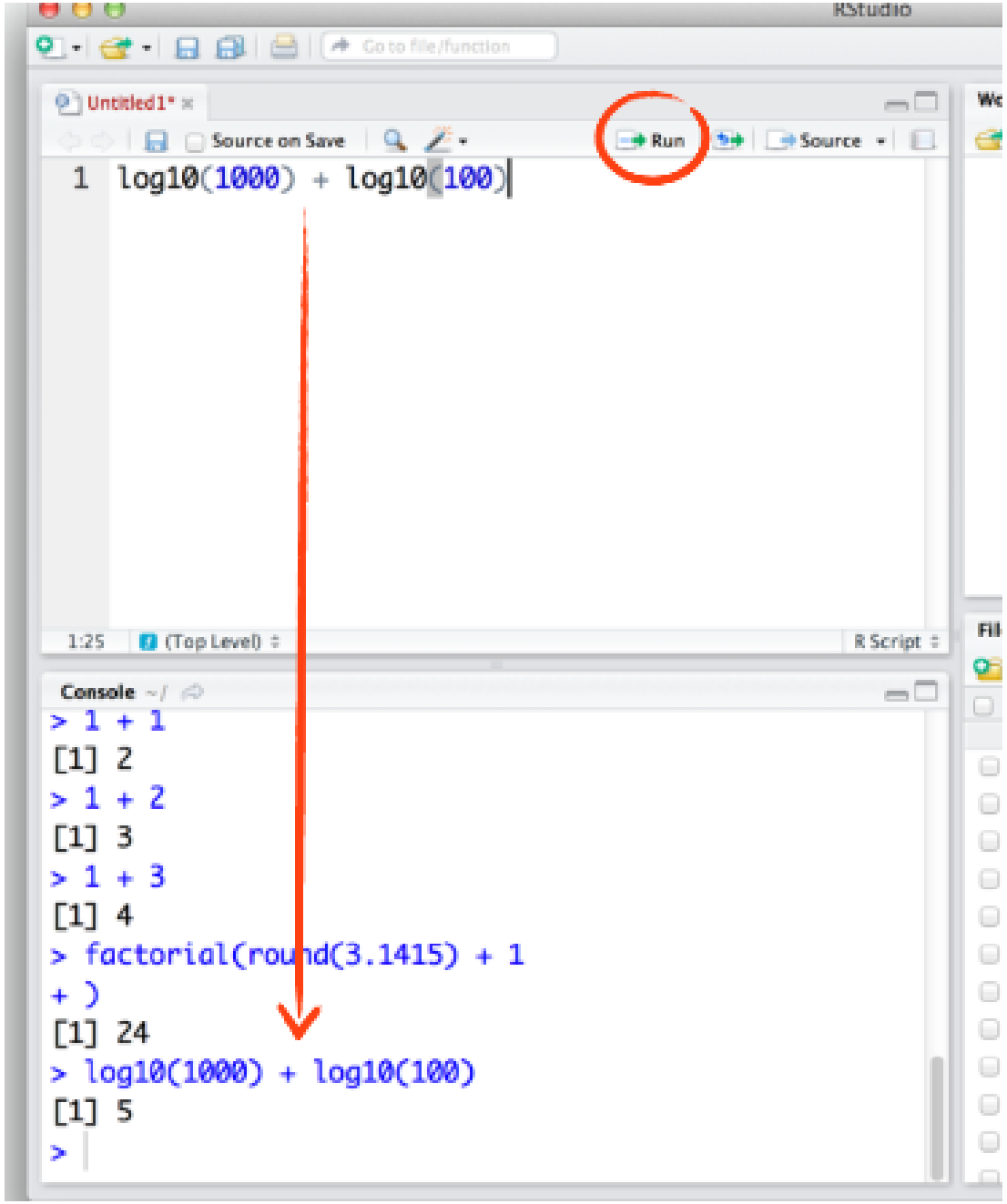
Workflow

- Its easier to compose your code in an R script than in the command line
- To open a script, go to File>New File>R Script in the tool bar

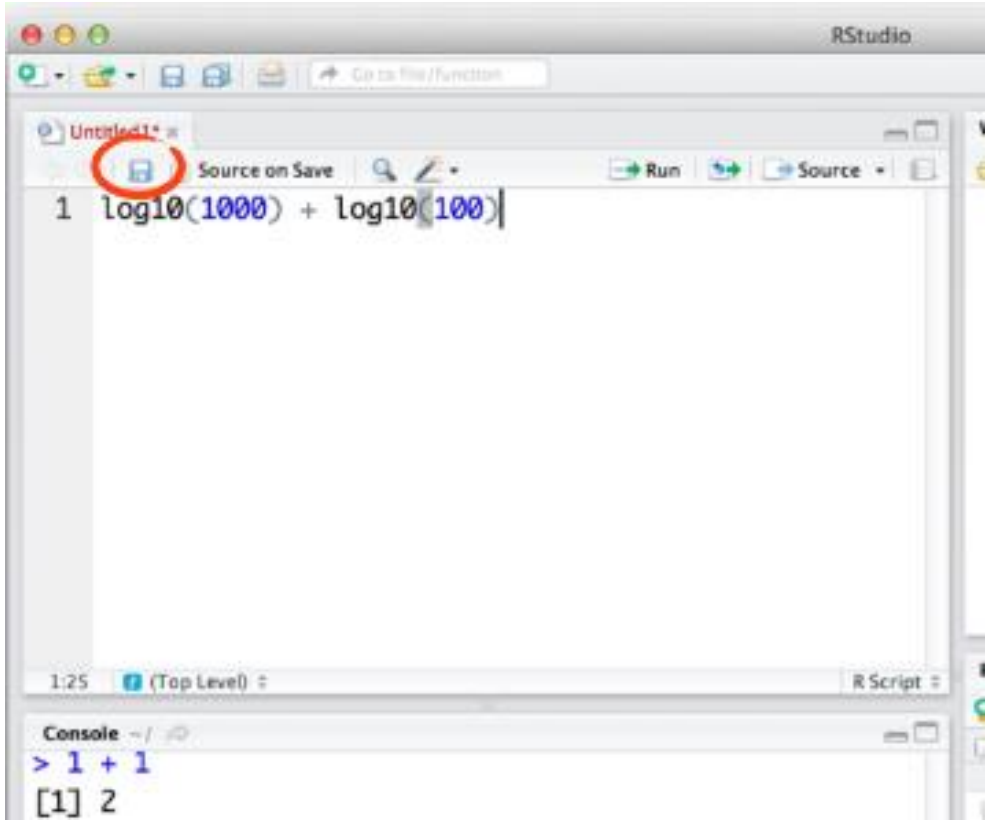


Common workflow

- 1. Write code in an R script
- 2. run code in console with Run



- Save when finish
- Either using icon or in dropdown menu



Creating a new project

1. Open RStudio
2. Go to the `File` menu and select `New Project`.
3. In the `New Project` window, choose `New Directory`. Then, choose `Empty Project`. Name your new directory `Intro-to-R` and then "Create the project as subdirectory of:" the Desktop (or location of your choice).
4. Click on `Create Project`.
5. After your project is completed, if the project does not automatically open in RStudio, then go to the `File` menu, select `Open Project`, and choose `Intro-to-R.Rproj`.
6. When RStudio opens, you will see three panels in the window.
7. Go to the `File` menu and select `New File`, and select `R Script`. The RStudio interface should now look like the screenshot below.

The working directory

- Where R currently thinks ‘home’ is, all file paths are relative to this

```
getwd()
```

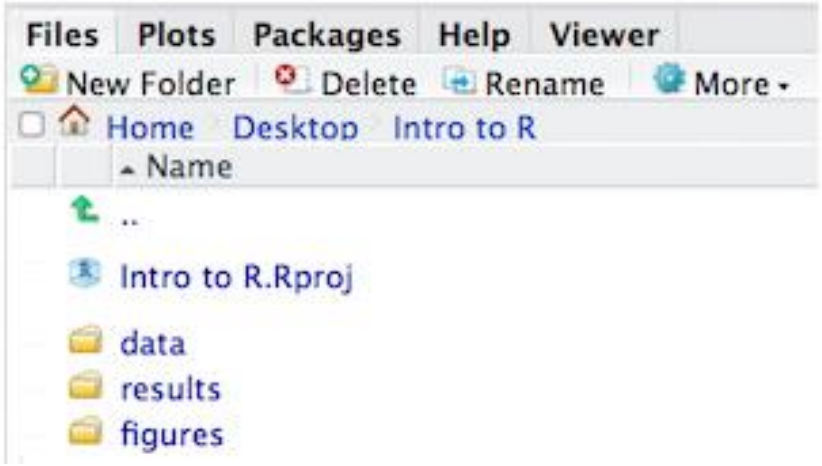
- Visualise your working directory from the *Files* tab
- If you want to choose different working directory you can navigate there using the *More* dropdown menu
- See the File Pane

Workspace

- ls()
- See the Environment Pane

Structuring your working directory

- You should separate data into original and intermediate
- Eg you may want to create data/ directory to store raw data
- And results/ directory to store analyses
- Figure/ directory could be used for the plots you generate



Shortcuts

- Up arrow
- Tab
- Ctrl + up arrow
- Ctrl + enter
- And many, many more…

Keyboard Shortcut Quick Reference

Tabs

Ctrl+Shift+.	Switch to Tab...
Ctrl+Tab	Next Tab
Ctrl+Shift+Tab	Previous Tab
Ctrl+Shift+F11	First Tab
Ctrl+Shift+F12	Last Tab

Panes

Ctrl+1	Move Focus to Source
Ctrl+2	Move Focus to Console
Shift+Alt+T	Move Focus to Terminal
Ctrl+3	Move Focus to Help
Ctrl+4	Show History
Ctrl+5	Show Files
Ctrl+6	Show Plots
Ctrl+7	Show Packages
Ctrl+8	Show Environment
Ctrl+9	Show Viewer
Ctrl+F1	Show Vcs
Ctrl+F2	Show Build
Ctrl+F5	Show Connections
Ctrl+Shift+Alt+0	Show All Panes

Add Shift to zoom (maximize) pane.

Files

Ctrl+S	Save
Ctrl+Alt+S	Save All
Ctrl+Shift+N	New R Script
Ctrl+O	Open File...
Ctrl+W	Close
Ctrl+Shift+Alt+W	Close All Except Current
Ctrl+Shift+W	Close All
Ctrl+Shift+F	Find in Files...

Source Navigation

Ctrl+F9	Back
Ctrl+F10	Forward
Ctrl+Alt+U	Find Usages
Ctrl+F3	Use Selection for Find
Ctrl+F	Find...
F3	Find Next
Shift+F3	Find Previous
Ctrl+Shift+J	Replace and Find
Ctrl+.	Go To File/Function...
Shift+Alt+G	Go to Line...
Shift+Alt+J	Jump To...
Ctrl+P	Jump To Matching
Ctrl+Shift+Alt+E	Expand To Matching
Ctrl+Shift+O	Show Document Outline
Ctrl+Alt+Up	Add Cursor Above Current Cursor
Ctrl+Alt+Down	Add Cursor Below Current Cursor
Ctrl+Shift+Up	Expand Selection
Ctrl+Shift+Down	Shrink Selection
Ctrl+PgDn	Go to Next Section
Ctrl+PgUp	Go to Previous Section
Ctrl+Alt+A	Split Into Lines
Ctrl+Shift+Alt+A	Edit Lines from Start
Ctrl+Shift+Alt+Up	Move active cursor up
Ctrl+Shift+Alt+Down	Move active cursor down

Execute

Ctrl+Shift+S	Source Active File
Ctrl+Shift+Enter	Source with Echo
Ctrl+Shift+Enter	Preview JS
Ctrl+Shift+Enter	Preview SQL
Ctrl+Alt+G	Source a File...
Ctrl+Shift+P	Re-Run Previous
Ctrl+Enter	Run Selected Line(s)
Alt+Enter	Run Line(s) without moving cursor
Ctrl+Alt+R	Run All
Ctrl+Alt+B	Run From Beginning To Line
Ctrl+Alt+E	Run From Line to End
Ctrl+Alt+F	Run Function Definition
Ctrl+Alt+T	Run Code Section

Source Editor

Ctrl+Alt+I	Insert Chunk
Ctrl+Shift+R	Insert Section...
Ctrl+Alt+X	Extract Function
Ctrl+Alt+V	Extract Variable
Ctrl+Shift+C	Comment/Uncomment Lines
Ctrl+I	Reindent Lines
Ctrl+Shift+/	Reflow Comment
Ctrl+Shift+A	Reformat Code
Ctrl+Shift+Alt+D	Show Diagnostics (Project)
Alt+L	Collapse Fold
Shift+Alt+L	Expand Fold
Alt+O	Collapse All Folds
Shift+Alt+O	Expand All Folds
Alt+Up	Move Lines Up
Alt+Down	Move Lines Down
Ctrl+D	Delete Line
Ctrl+U	Yank Line Up to Cursor
Ctrl+K	Yank Line After Cursor
Ctrl+Y	Insert Yanked Text
Alt+-	Insert Assignment Operator
Ctrl+Shift+M	Insert Pipe Operator
Ctrl+Shift+Alt+M	Rename in Scope
Ctrl+Shift+Alt+R	Insert Roxygen Skeleton

Debug

Shift+F9	Toggle Breakpoint
F10	Execute Next Line
Shift+F4	Step Into Function
Shift+F6	Finish Function/Loop
Shift+F5	Continue
Shift+F8	Stop Debugging

Source Control

Ctrl+Alt+D	Diff Files
Ctrl+Alt+M	Commit...

Build

Ctrl+Shift+K	Compile PDF
Ctrl+Shift+K	Preview
Ctrl+Shift+K	Knit Document
Ctrl+Shift+B	Install and Restart
Ctrl+Shift+L	Load All
Ctrl+Shift+E	Check Package
Ctrl+Shift+T	Test Package
Ctrl+Shift+D	Document

Console

Ctrl+L	Clear Console
Ctrl+Up	Popup Command History

Terminal

Shift+Alt+R	New Terminal
Ctrl+Alt+F11	Previous Terminal
Ctrl+Alt+F12	Next Terminal

Other

F1	Show Function Help
F2	Go To Function / File
Tab	Complete Code
Ctrl+Q	Quit Session...
Ctrl+Shift+F10	Restart R
Ctrl+Alt+F11	Previous Plot
Ctrl+Alt+F12	Next Plot
Ctrl+`	Request Log
Ctrl+Shift+`	Log focused element
Ctrl+Shift+H	Choose Directory...
Ctrl+F8	Sync PDF View to Editor
F7	Check Spelling...
Shift+Alt+K	Keyboard Shortcuts Help

See All Shortcuts...