Introduction to Rstudio

Anders K. Krabberød

a.k.krabberod@ibv.uio.no

https://github.com/krabberod/UNIS_AB332_2024

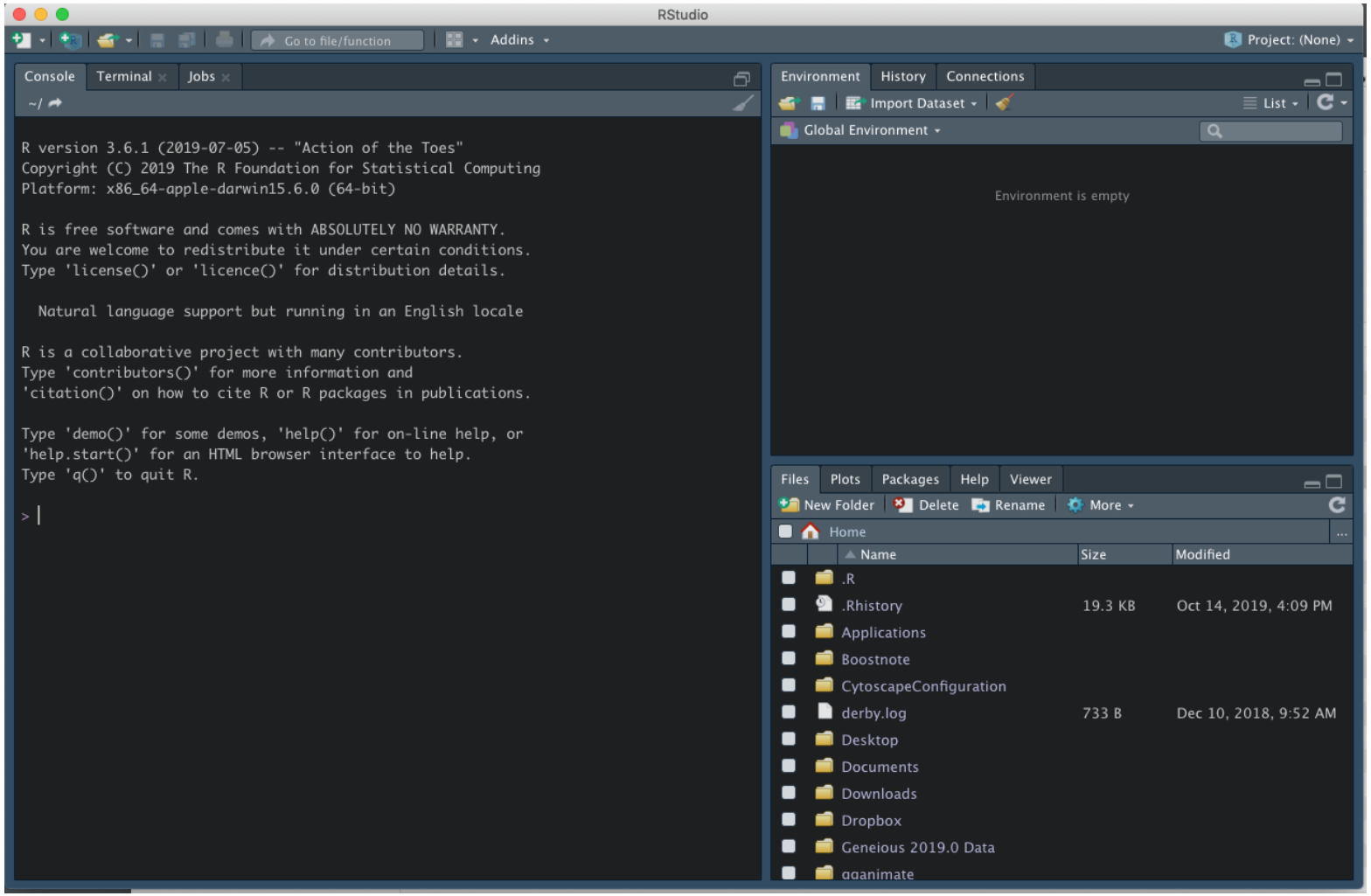
UNIS - AB332 - 2024

UiO : Institutt for biovitenskap
Det matematisk-naturvitenskapelige fakultet

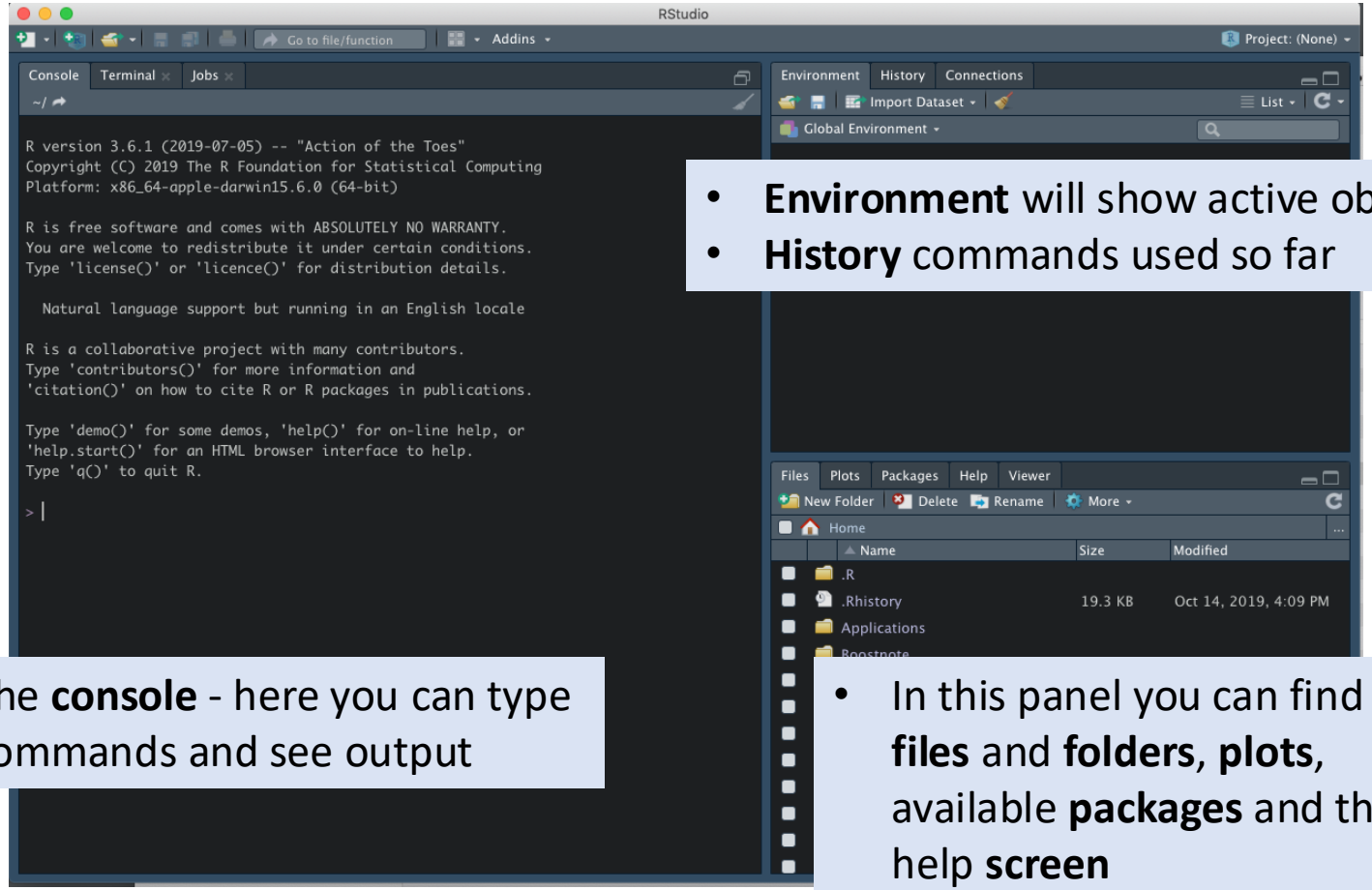
Rstudio

- RStudio is an Integrated Development Environment (IDE) for R, a programming language for statistical computing and graphics.
- Customizable workbench with all of the tools required to work with R in one place (console, source, plots, workspace, help, history, etc.).
- Syntax highlighting editor with code completion.
- Execute code directly from the source editor (line, selection, or file).
- Runs on Windows, Mac, and Linux, and has a community-maintained FreeBSD port.
- Can also be run as a server, enabling multiple users to access the RStudio IDE using a web browser.
- (Source https://github.com/rstudio/rstudio)

Rstudio - Graphical interface



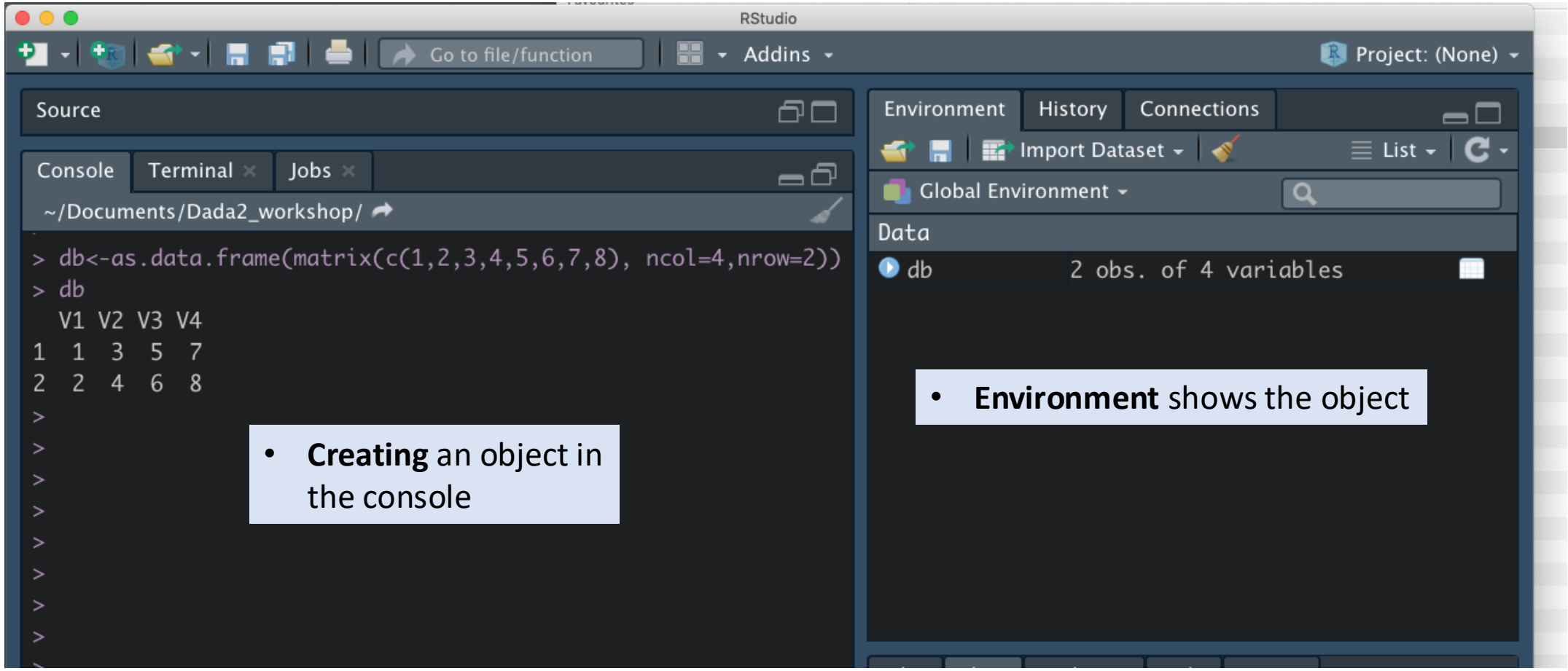
Rstudio



- **Environment** will show active objects
- **History** commands used so far

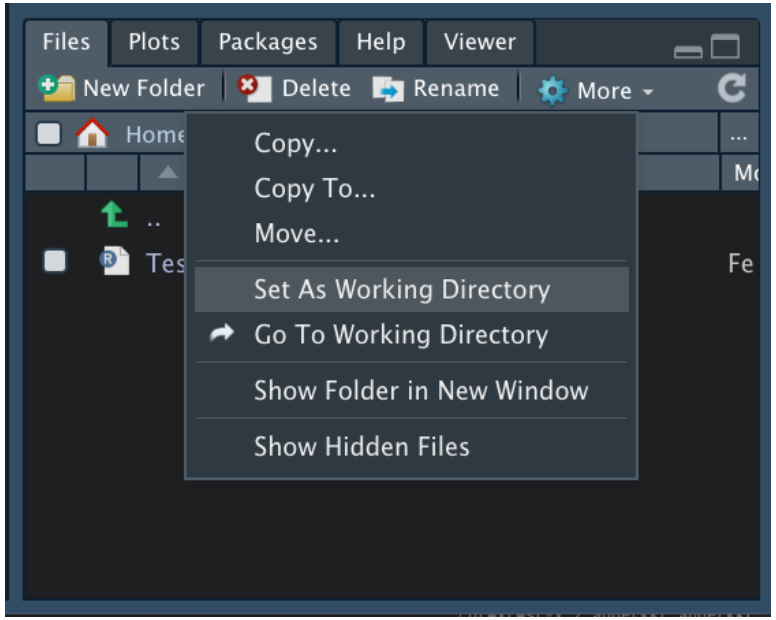
The **console** - here you can type commands and see output

- In this panel you can find **files** and **folders**, **plots**, available **packages** and the help **screen**


RStudio
Go to file/function
Addins
Project: (None)
Source
Console
Terminal
Jobs
~/Documents/Dada2_workshop/
> db<-as.data.frame(matrix(c(1,2,3,4,5,6,7,8), ncol=4,nrow=2))
> db
V1 V2 V3 V4
1 1 3 5 7
2 2 4 6 8
Environment
History
Connections
Import Dataset
List
Global Environment
Data
db
2 obs. of 4 variables
• Creating an object in the console
• Environment shows the object

Setting working directory

- Navigate to correct folder under the “files” tab
- Click “Set As Working Directory” (under *More*)



Setting working directory

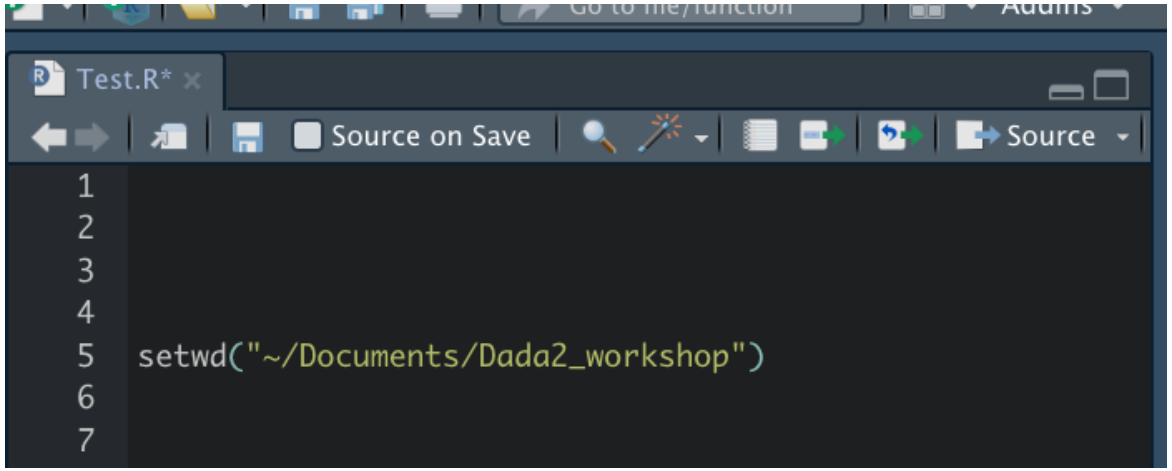
- Alternatively write

  MAC:

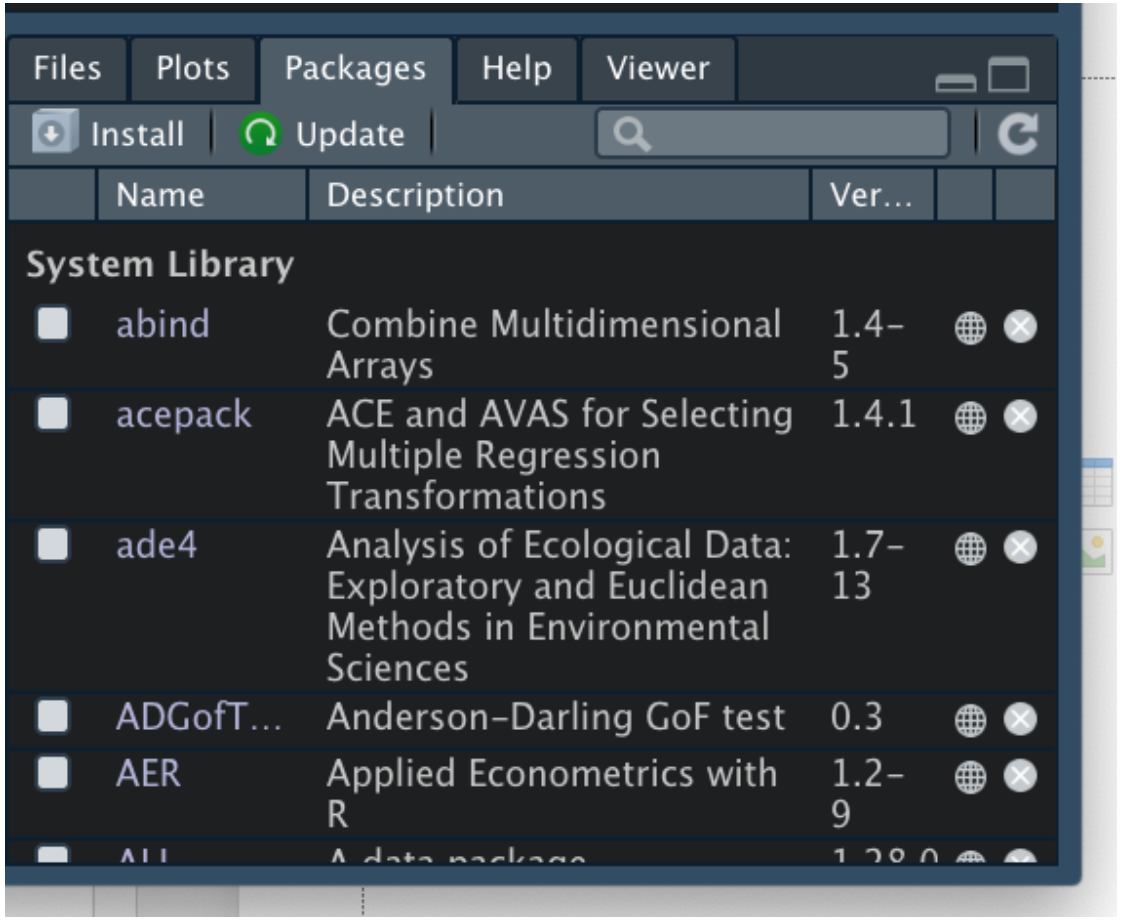
  ```
  setwd("~/path/to/my/folder")
  ```

  WINDOWS

  ```
  setwd("C:/path/to/my/folder")
  ```

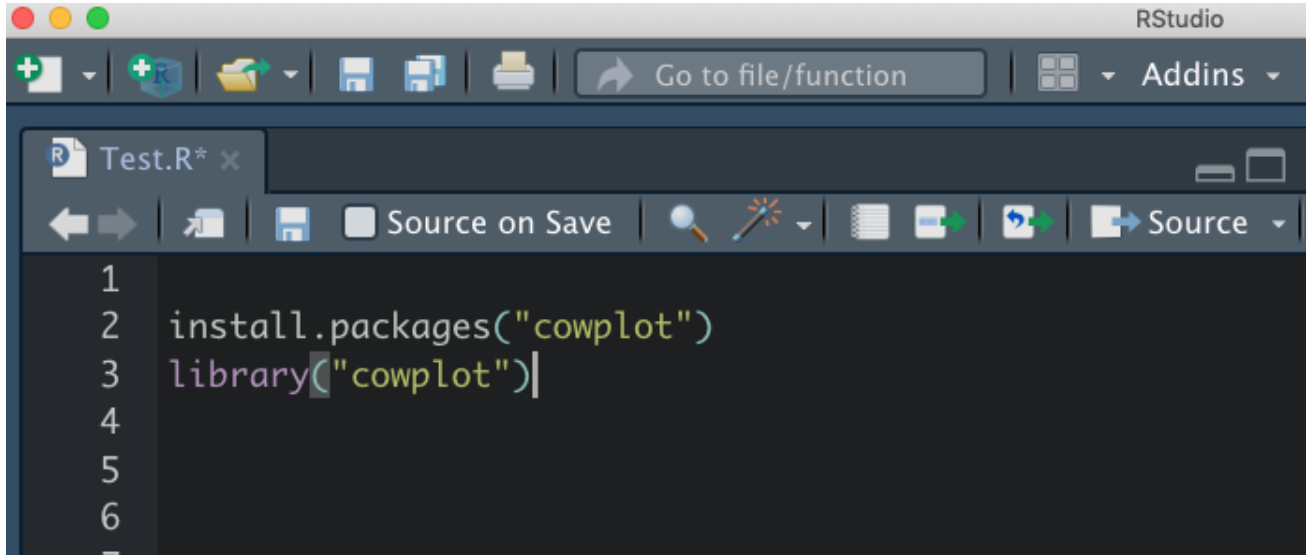


Installing packages



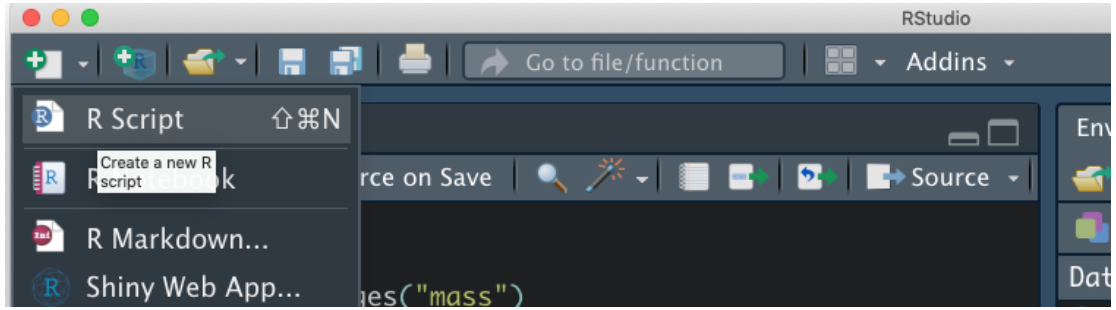
Installing packages 2

- Or use the command (with cowplot as example)
  - `install.packages("cowplot")`
- Installed packages can be loaded with the command
  - `library("cowplot")`

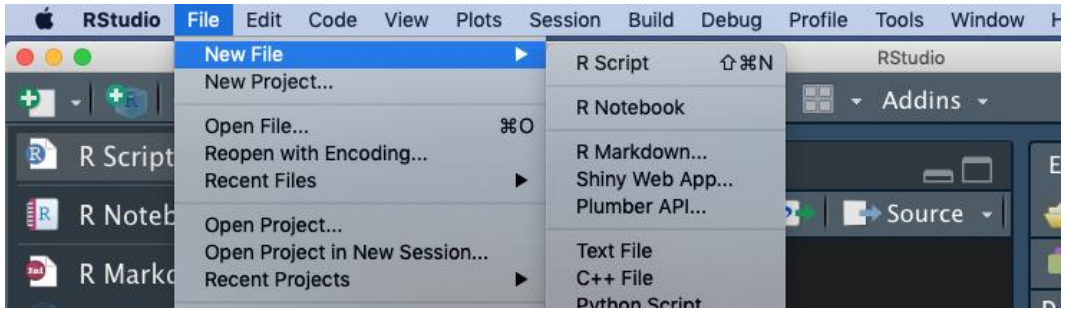


Using Scripts

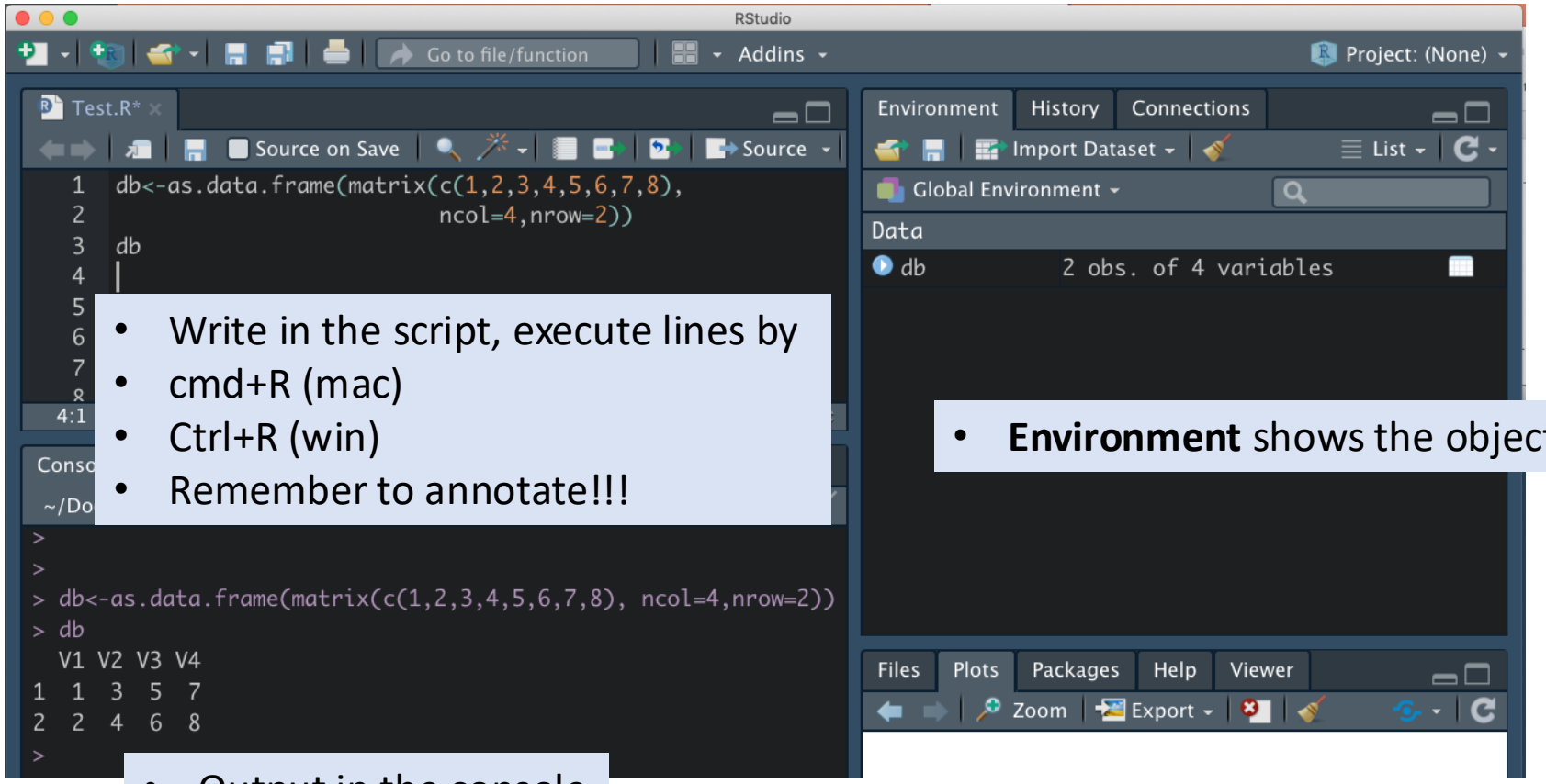
Click icon with a document and a + sign



OR click File -> New File -> R Script



Using Scripts

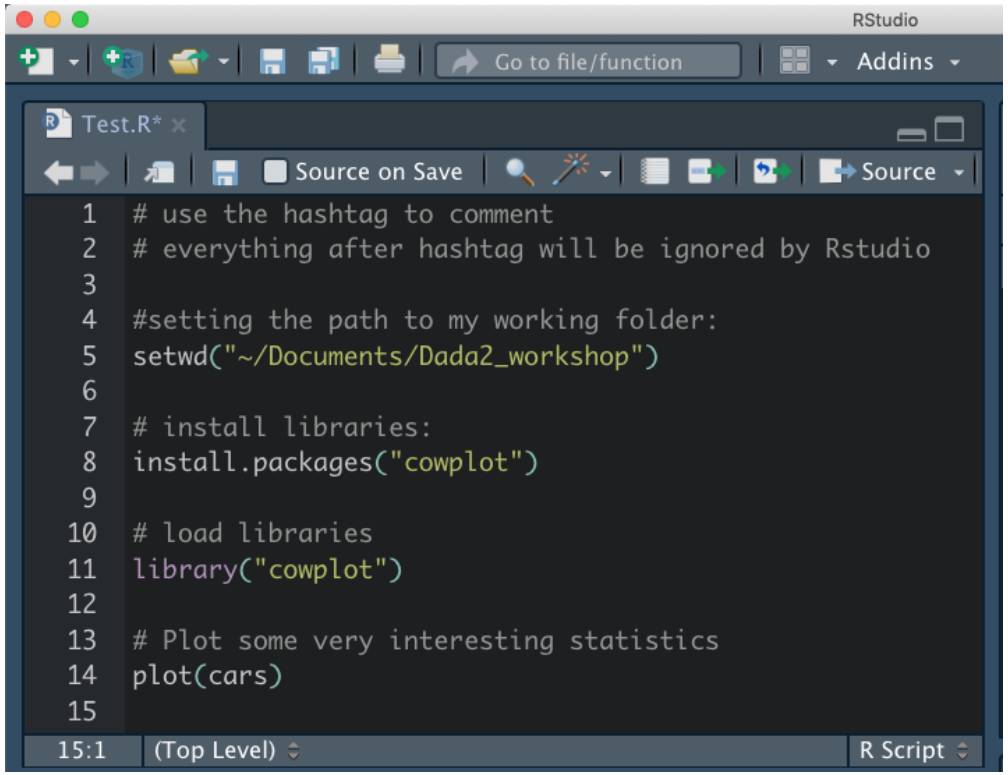


- Write in the script, execute lines by
- cmd+R (mac)
- Ctrl+R (win)
- Remember to annotate!!!

- **Environment** shows the object

- Output in the console

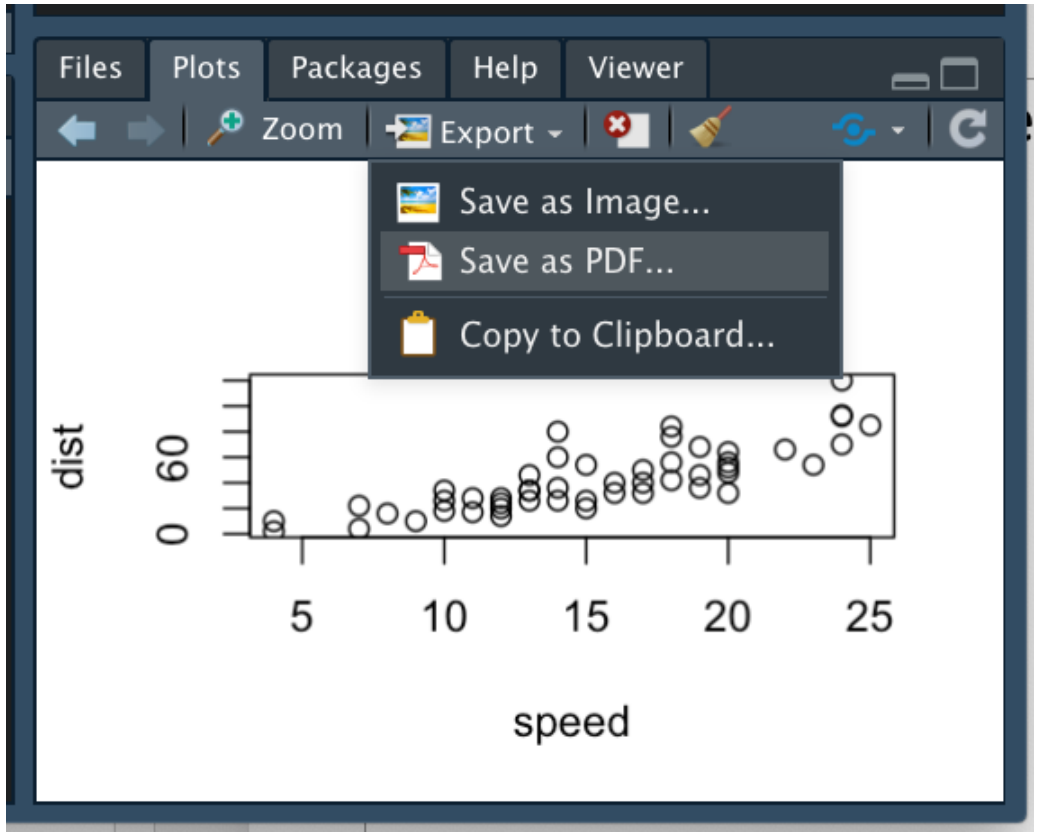
Comment and annotate your script!!!



- What the code does
- How the code does it
- How to use the code

Plotting plots and other dots

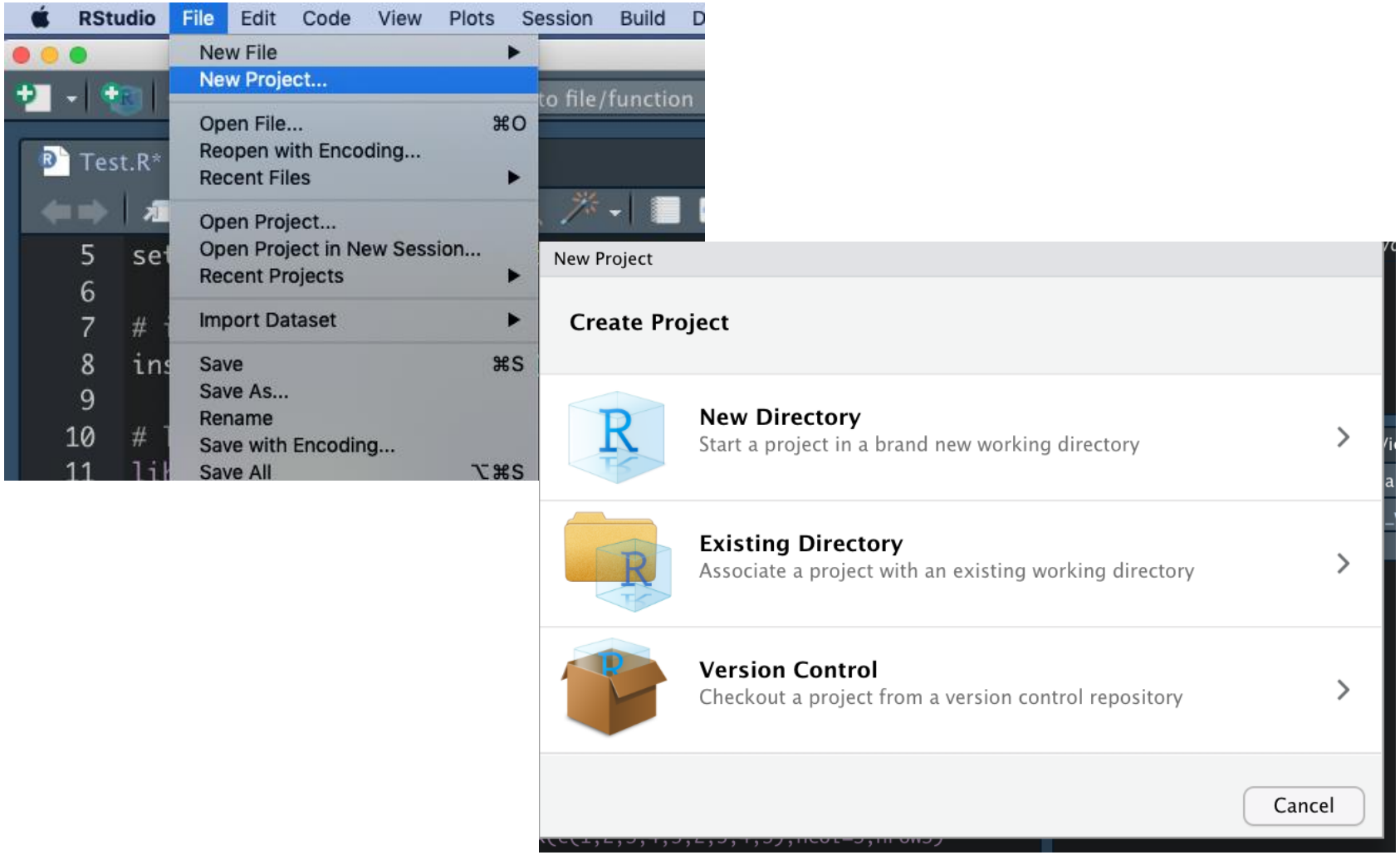
- Plots will appear in the *plots* tab and can be exported in various formats



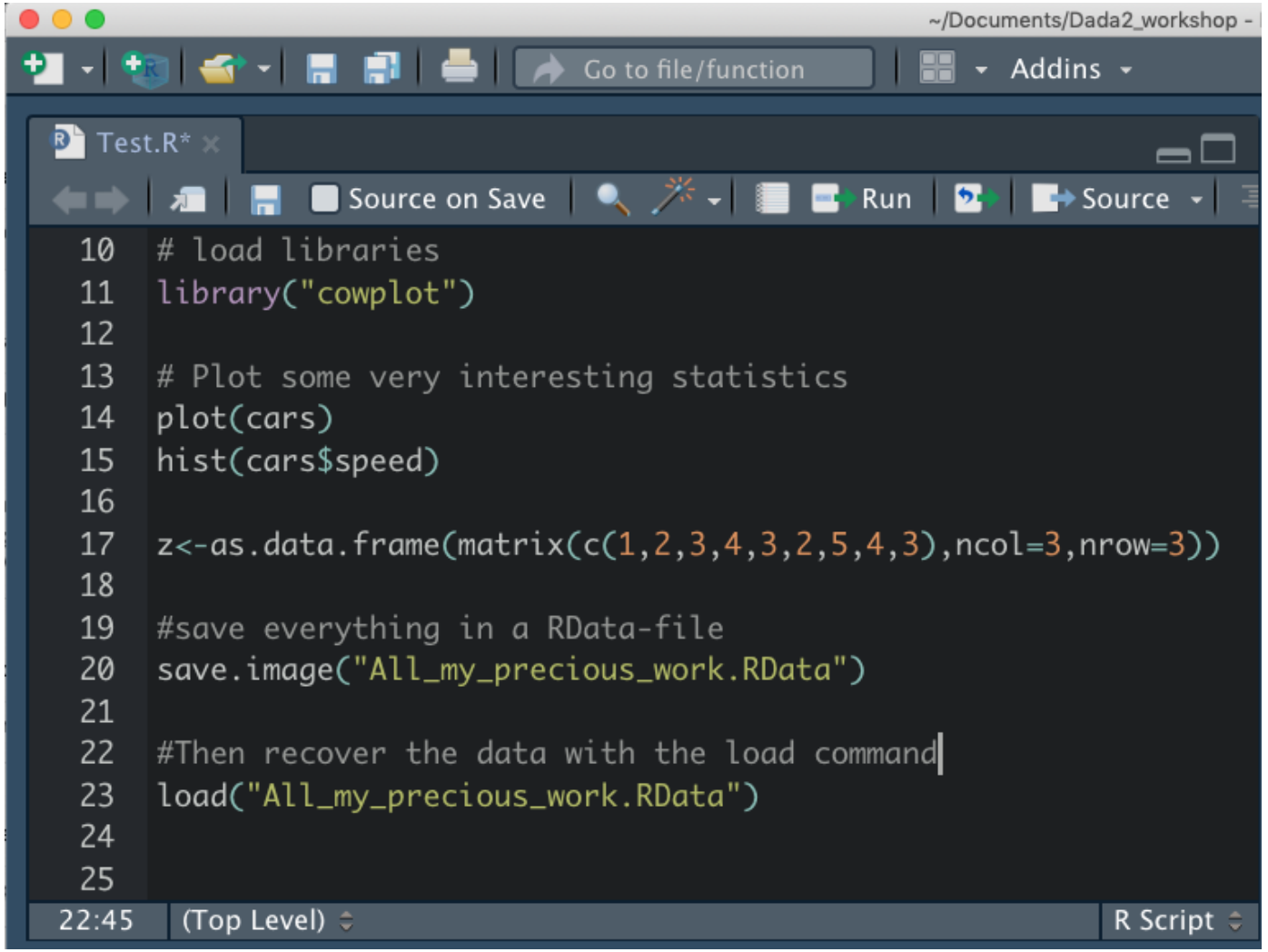
Use R-projects!

- This will set the default working directory for the particular project, and makes it easy to save everything in the same folder.
- Very helpful when working on several different projects
- Also very easy to integrate with *github* and version control with the option to push and pull repositories (not covered in this lecture)
- Or for sharing all data with somebody else using RStudio

Use R-projects



Use R-projects

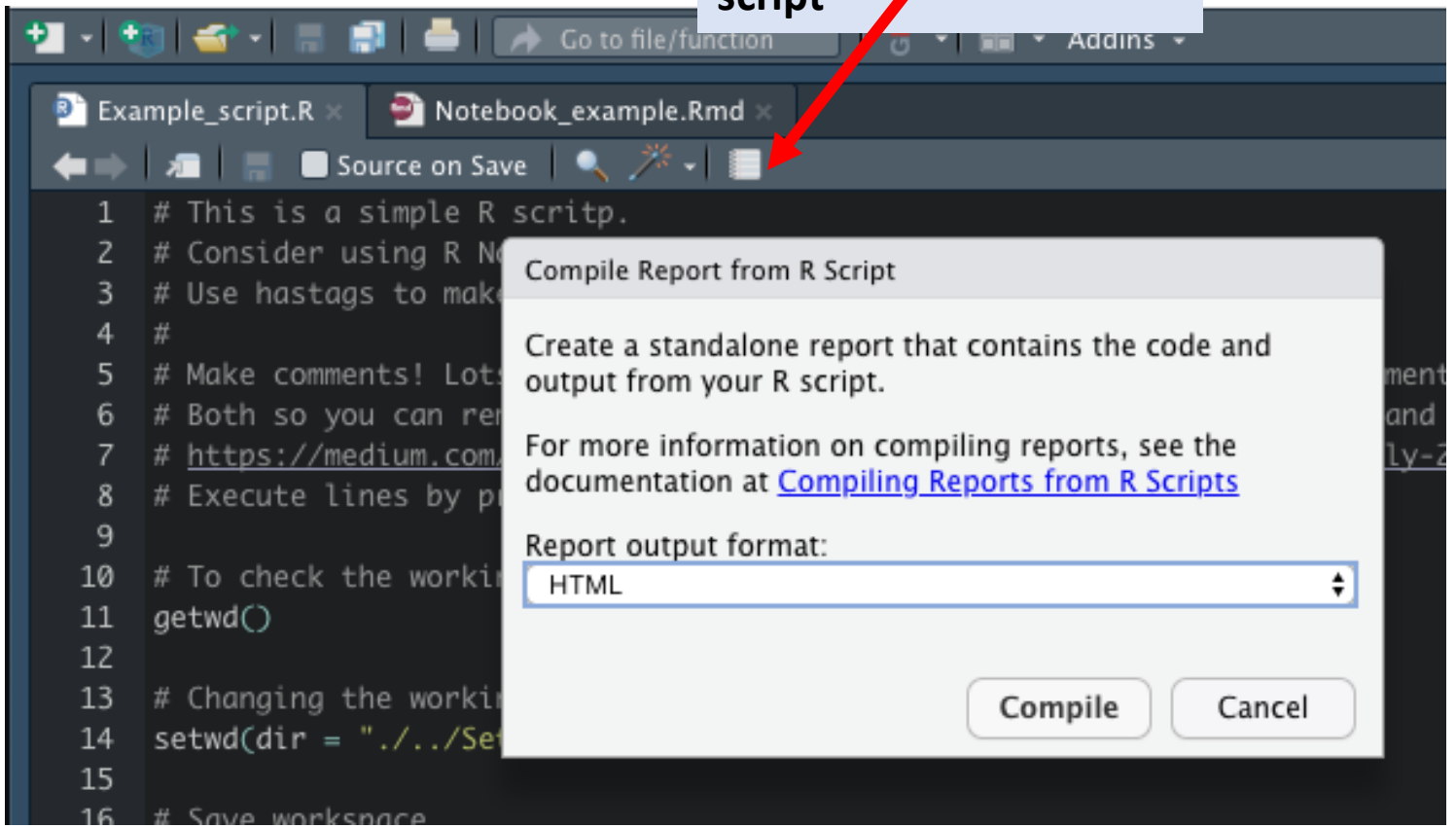


R Markdown and R notebooks

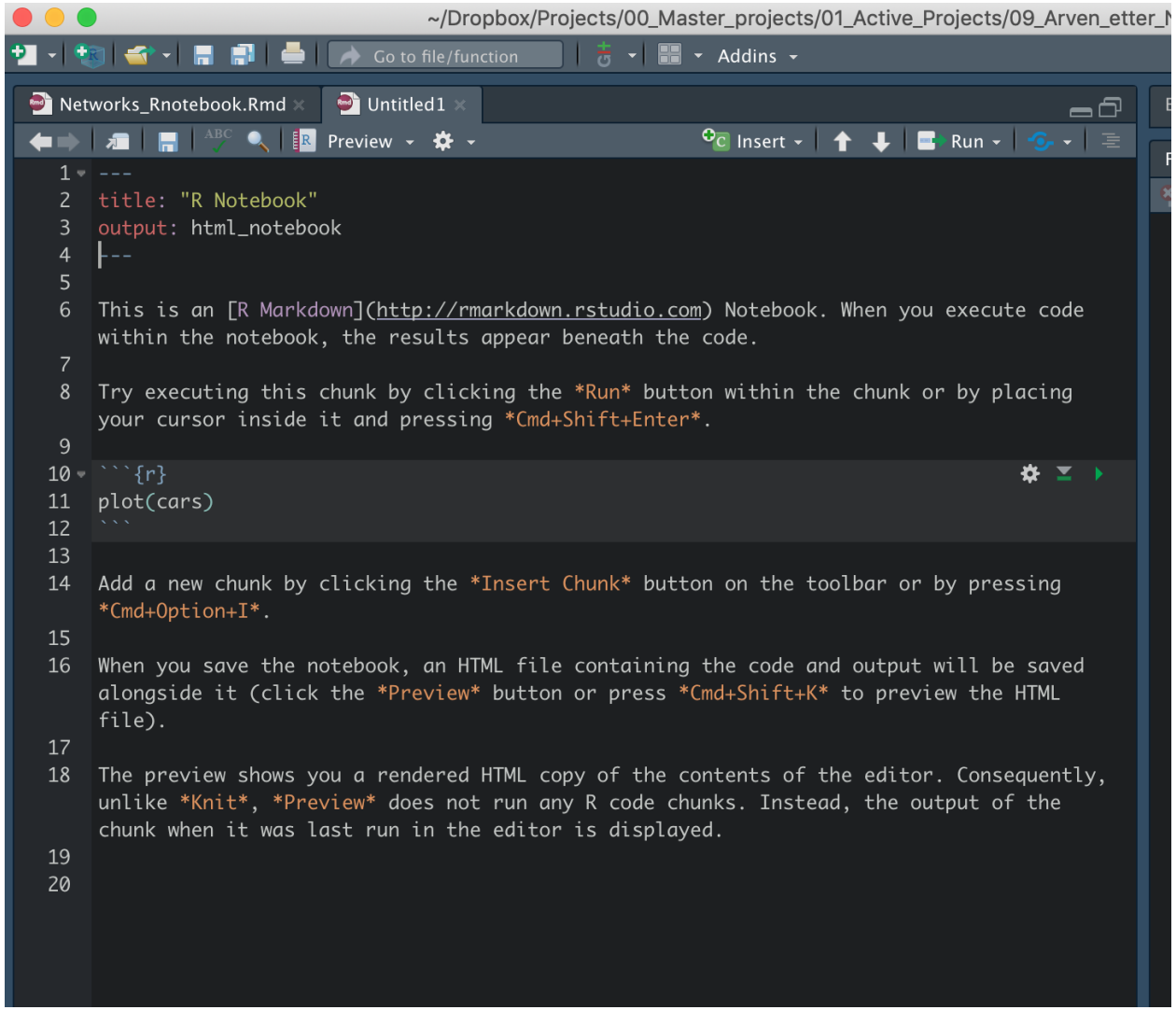
- An alternative to “simple” script in Rstudio.
- Advantage: easy to export in other easy-to-read formats (i.e. html, pdf, word, presentations).
- Markdown language is an easy way of formatting using plain text
- R Notebook is somewhat more powerful with additional options for formatting.
- Can run chunks of code from other languages *within* Rstudio
- **Disadvantage**: Not compatible with (standalone aka. vanilla) R, which is often used on clusters and servers.

Export a report

This button will help to generate a pdf, html, or word document of your script



R Notebook


~/Dropbox/Projects/00_Master_projects/01_Active_Projects/09_Arven_etter_N
Go to file/function
Addins
Networks_Rnotebook.Rmd
Untitled1
Preview
Insert
Run
---
title: "R Notebook"
output: html_notebook

This is an [R Markdown](http://rmarkdown.rstudio.com) Notebook. When you execute code within the notebook, the results appear beneath the code.
Try executing this chunk by clicking the *Run* button within the chunk or by placing your cursor inside it and pressing *Cmd+Shift+Enter*.
```{r}
plot(cars)
```
Add a new chunk by clicking the *Insert Chunk* button on the toolbar or by pressing *Cmd+Option+I*.
When you save the notebook, an HTML file containing the code and output will be saved alongside it (click the *Preview* button or press *Cmd+Shift+K* to preview the HTML file).
The preview shows you a rendered HTML copy of the contents of the editor. Consequently, unlike *Knit*, *Preview* does not run any R code chunks. Instead, the output of the chunk when it was last run in the editor is displayed.