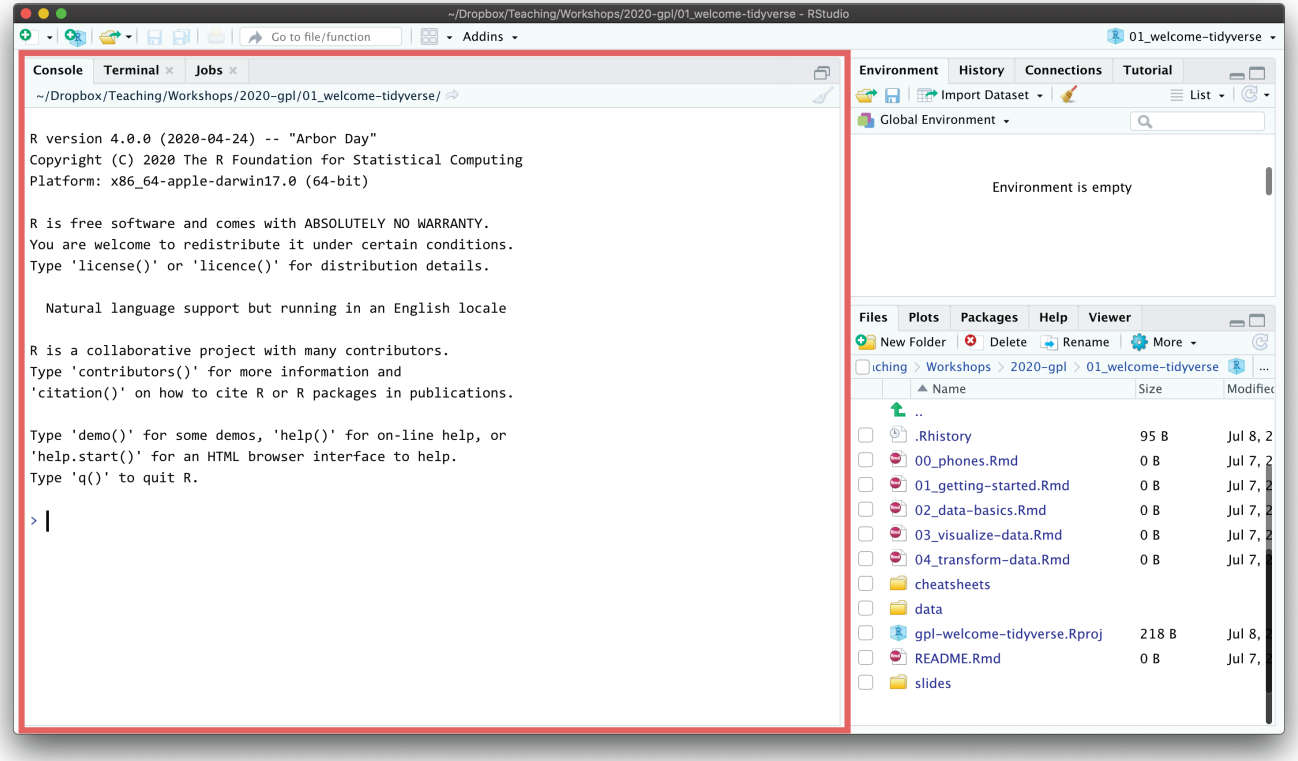
Getting started with R and RStudio

The engine

The dashboard

A tour of RStudio

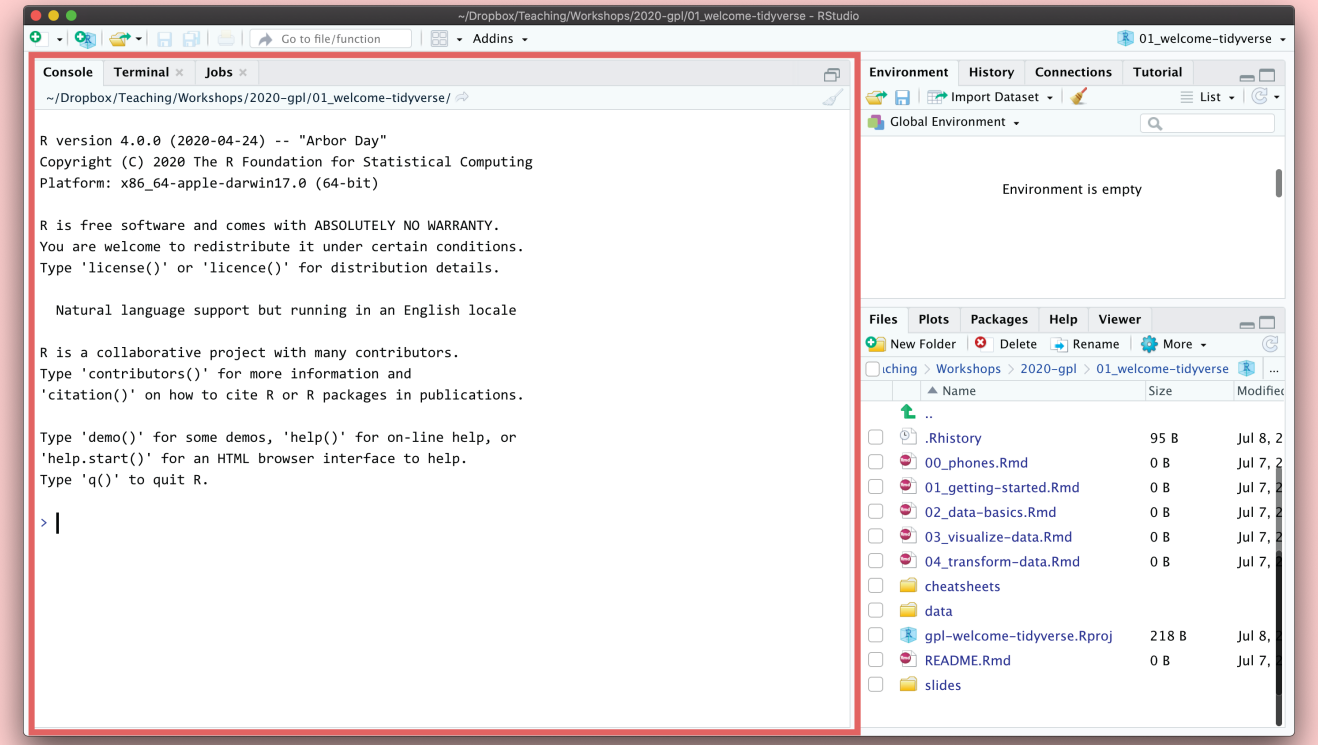
Console



R is awaiting your instructions

Type code here, press enter, and R will run it

Your turn



Type `2 + 2` in the console

Press enter

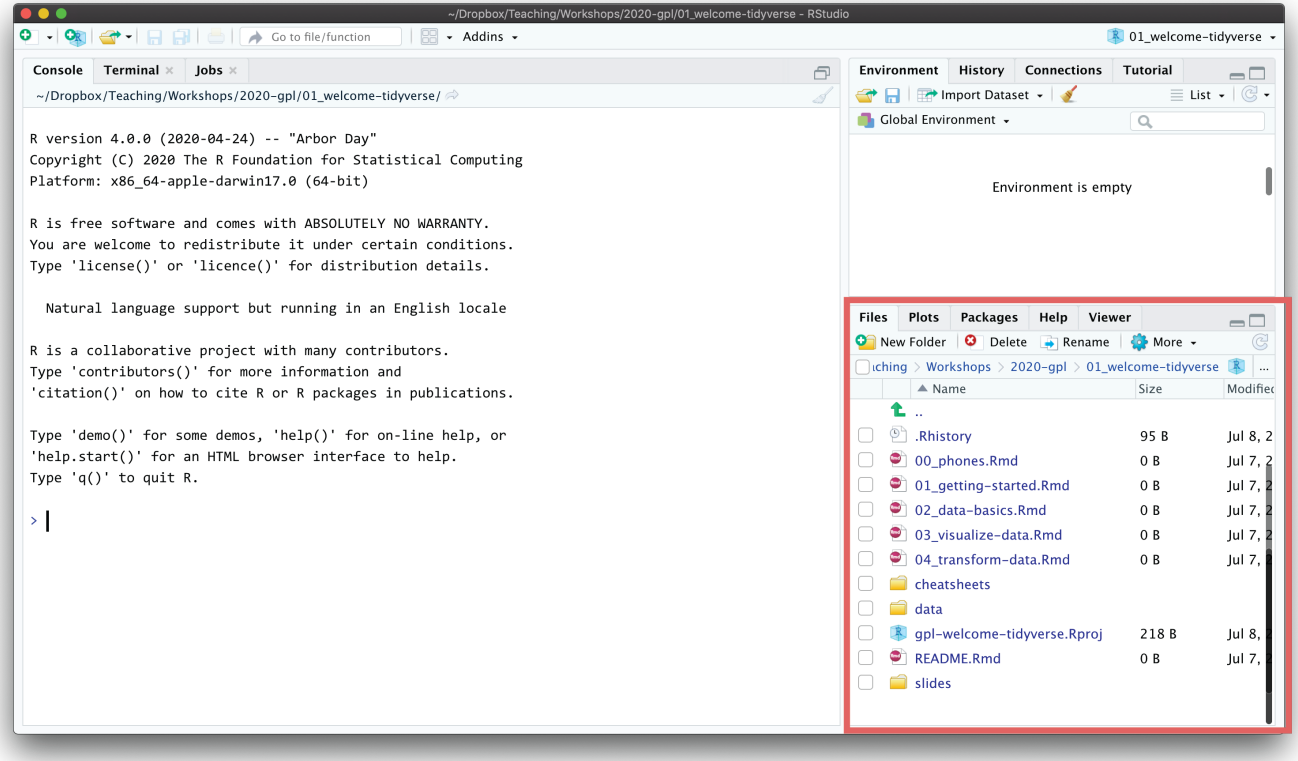
```r
2 + 2
```

```
## [1] 4
```

This is ephemeral though.
If you want to run this again, you'll have to type it again.

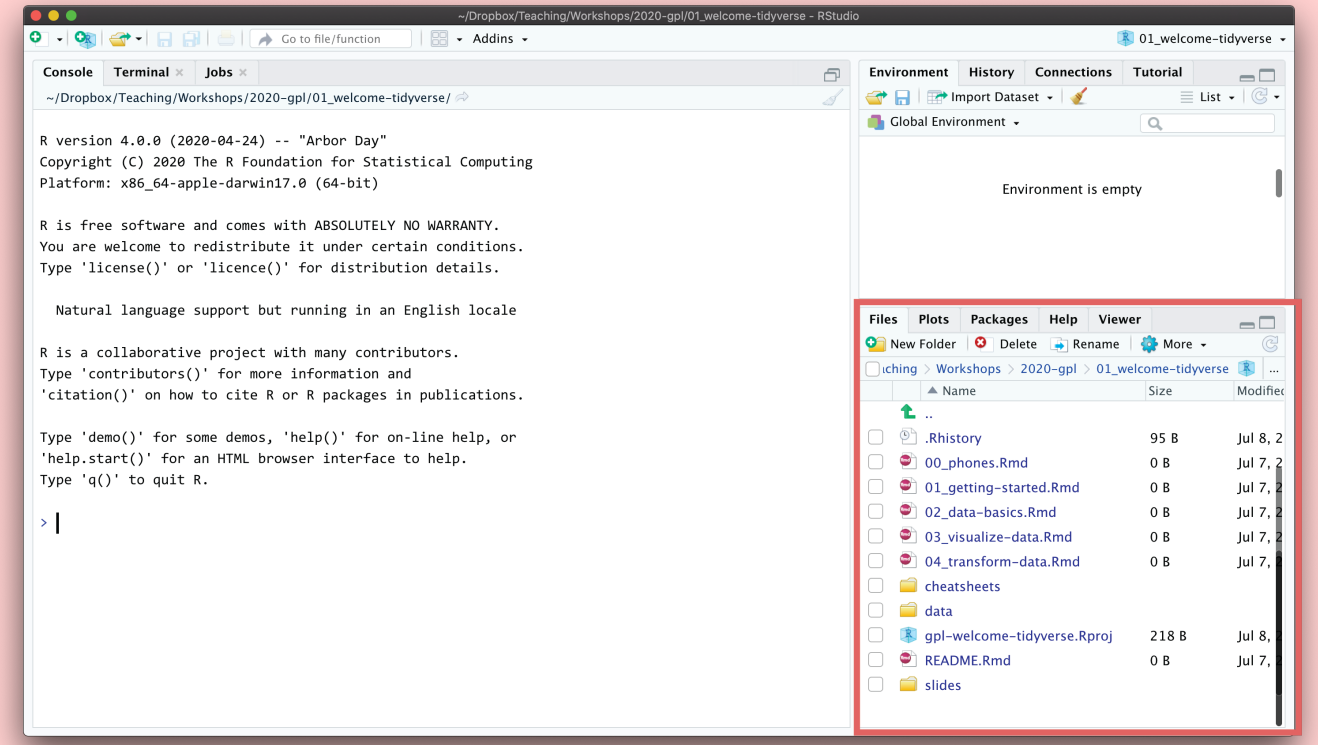
Store R code in a document instead

Files pane



All the files in your current working directory

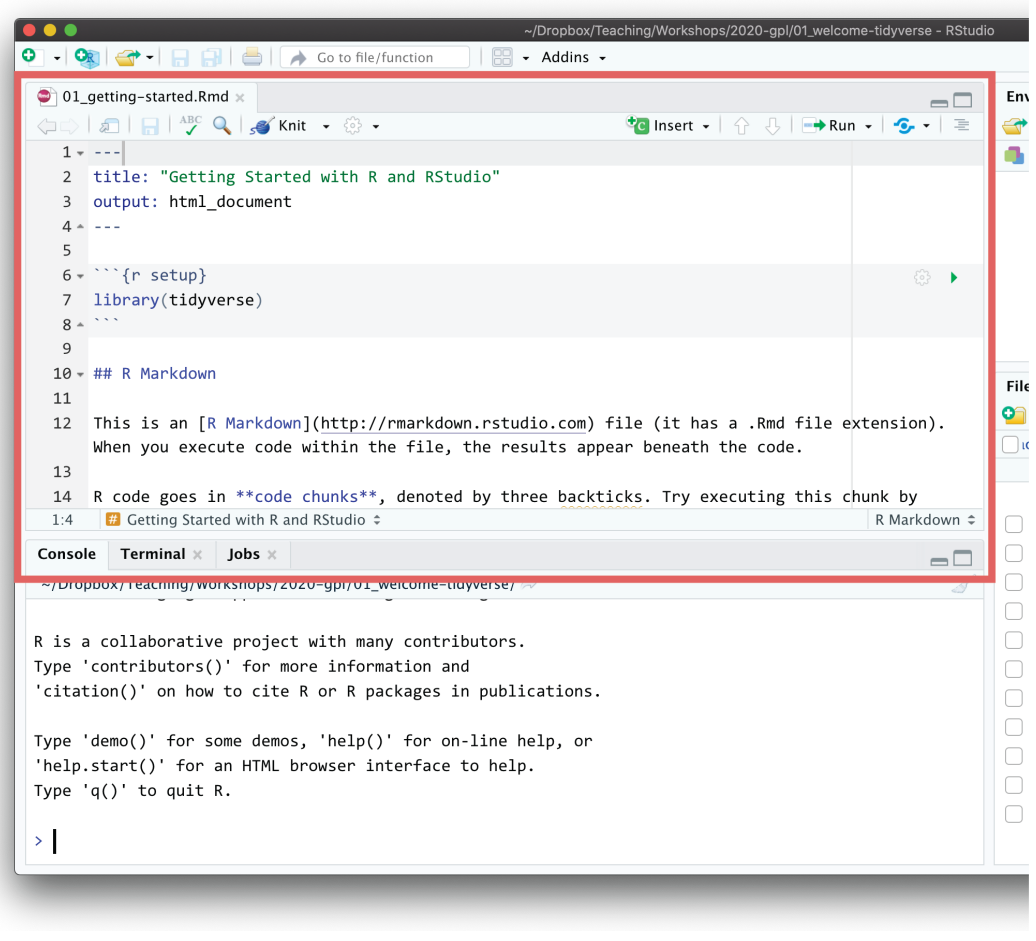
Your turn



Find `01_getting-started.Rmd`

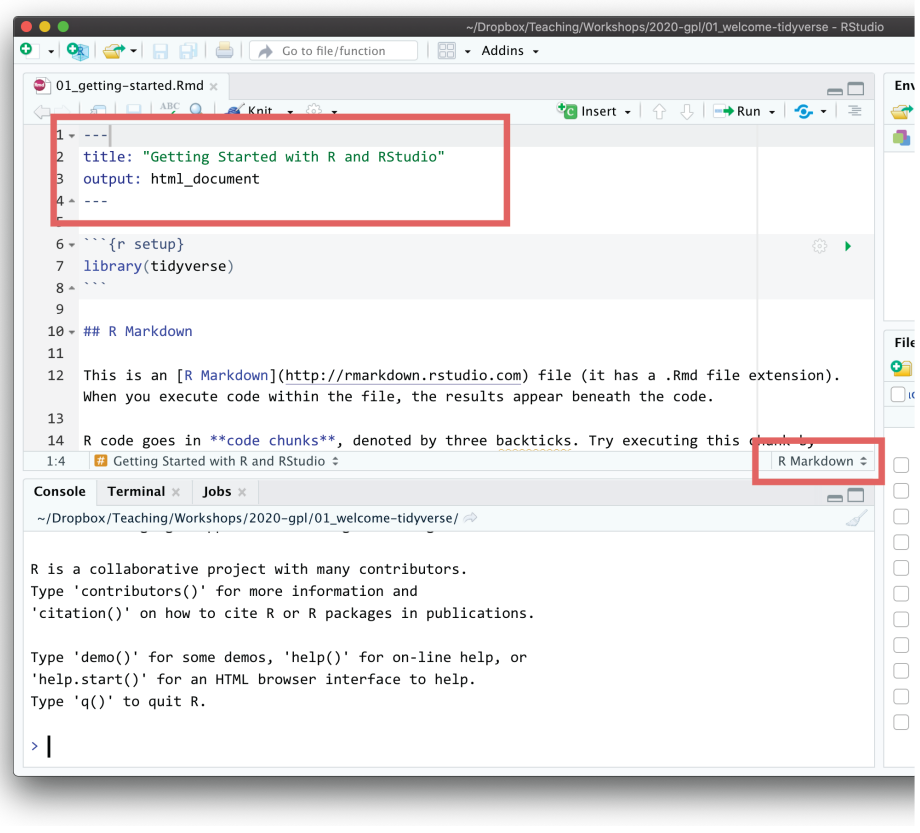
Click on its name to open the file

Source pane



Documents open here

R Markdown



Document format that combines text and code

Acts like a notebook for your analysis

R Markdown

Text

R Markdown

Text

Code

R Markdown

Text

Code

Output

Your turn

Read the instructions

Run the code chunk by clicking the play button

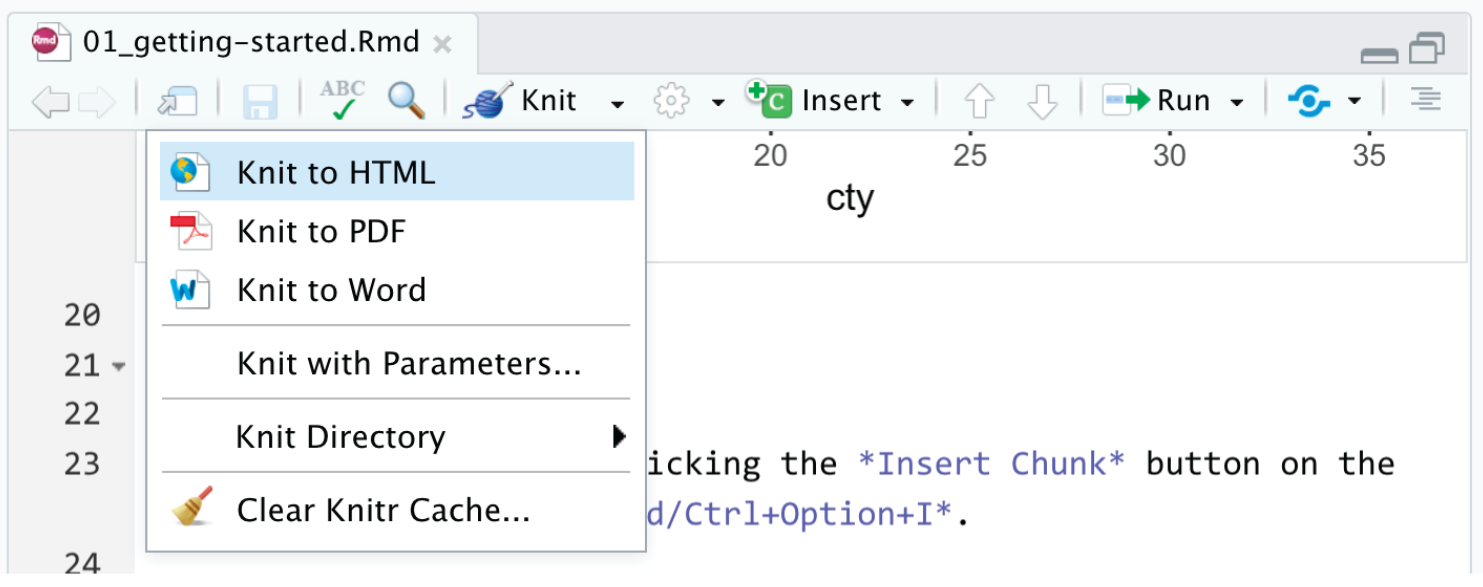
Your turn

Add a new chunk

Put `2 + 2` in the chunk and run it

Knitting

"Knit" an R Markdown document into a standalone sharable file



R Markdown

The best way to combine R code and narrative

We'll use it throughout the workshop:

I'll provide starter code

You'll complete "Your turns"

In the end, you'll have an annotated record for yourself

Your turn

Spot the difference:

```
filter(mtcars, cyl == 4)
```

```
four_cyls <- filter(mtcars, cyl == 4)
```

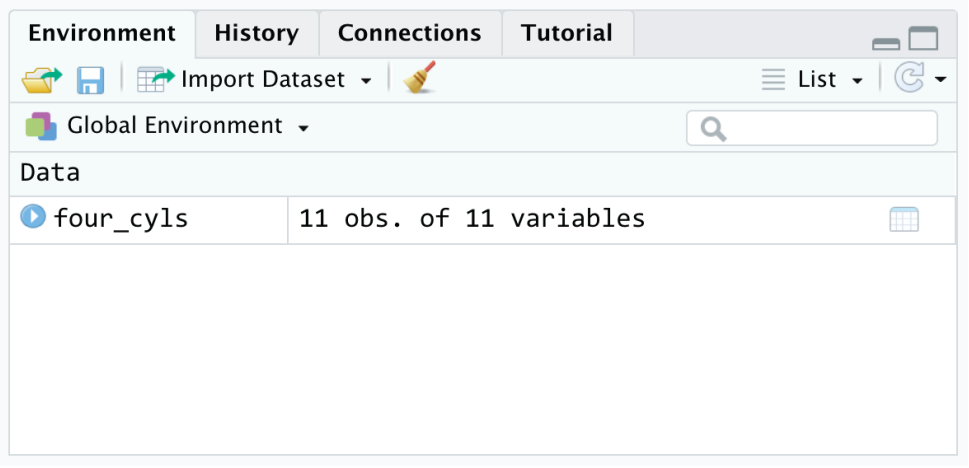
Find these chunks in the notebook and run them. What's different about what happens?

Assignment

<- assigns the output from the righthand side to a variable with the name on the lefthand side

```
four_cyls <- filter(mtcars, cyl == 4)
```

Environment pane



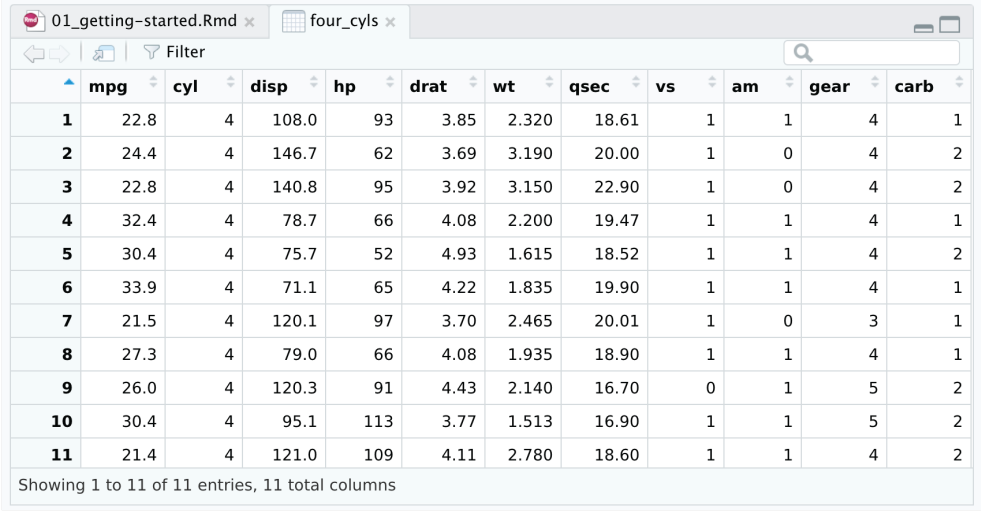
List of all the variables you've created

Your turn

Find `four_cyls` in the environment pane.
Click on the name `four_cyls`

What happens?

Viewer



	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
1	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
2	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
3	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
4	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
5	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
6	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
7	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
8	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
9	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
10	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
11	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

Showing 1 to 11 of 11 entries, 11 total columns

Clicking on an object in the environment panel opens it an interactive viewer tab

Functions

```
four_cyls <- filter(mtcars, cyl == 4)
```

Functions do things

Functions take arguments, output results

If you want to keep the output, assign it to a variable

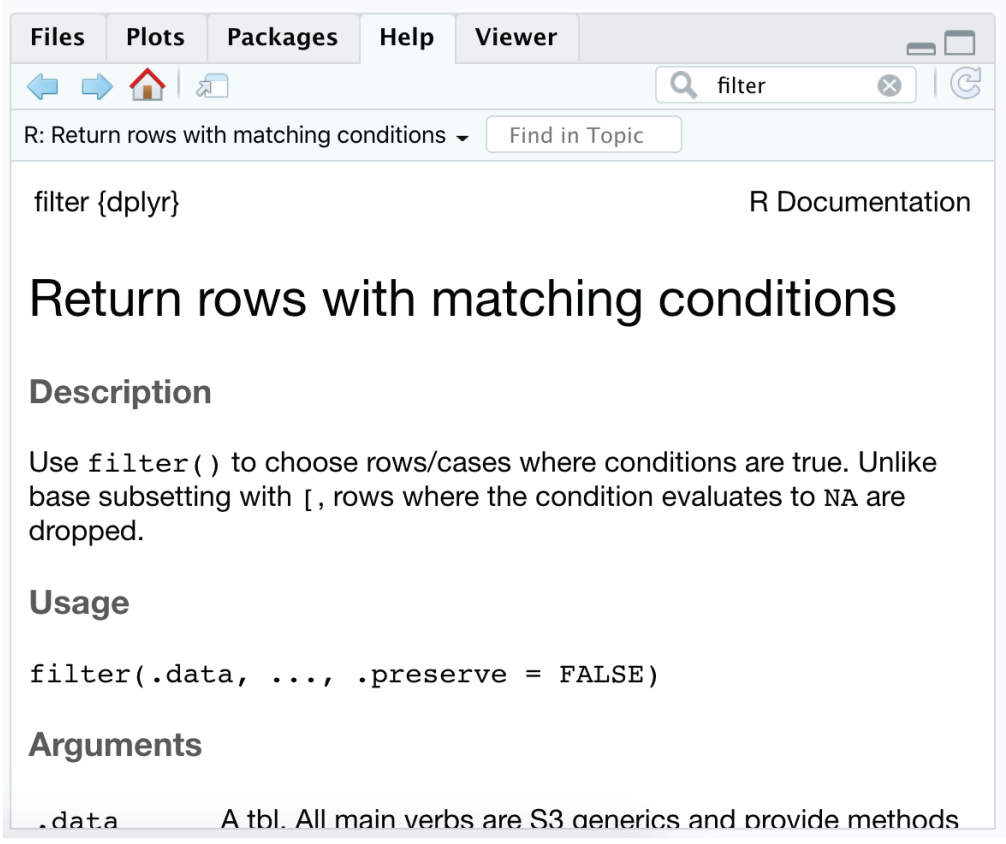
Help

To look up the help page for an R function, type this in the console:

```
?function_name
```

(Or google it!)

Help pane



These help pages prove details about the arguments you can supply a function

Often full of examples at the bottom

Your turn

Look at the help page for `seq`

Add a chunk that uses `seq()` to create a list of numbers from 5 to 100, spaced by 5 (so 5, 10, 15, 20, ...)

02:00

```r
seq(from = 5, to = 100, by = 5)
```

```
##  [1]   5  10  15  20  25  30  35  40  45  50  55  60  65  70
## [20] 100
```

Common syntax problem #1

Missing closing parentheses or quotes

```
mean(mtcars
```

```
"Oops this is wrong
```

Common syntax problem #2

Surrounding somehting in quotes when it should be (or vice versa)

```
mean("mtcars")
```

```
## Warning in mean.default("mtcars"): argument is not numeric or
## NA

## [1] NA
```

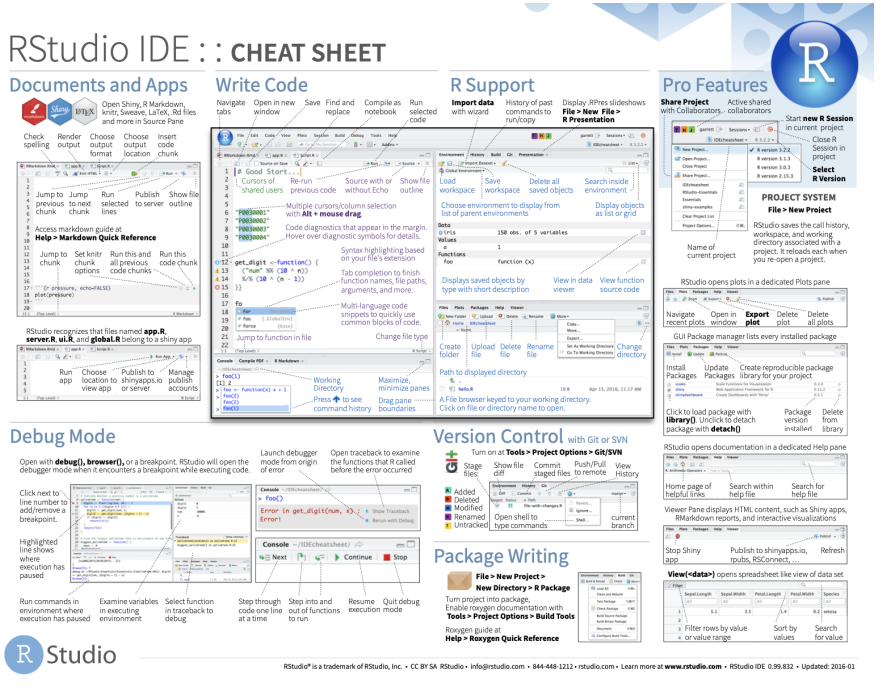
Your turn

There are three chunks under "Syntax gone wrong"

Run each, read the error message, and try to fix the syntax

Cheatsheets

Go to Help > Cheatsheets to find quick reference guides to different packages



Next up

Data basics