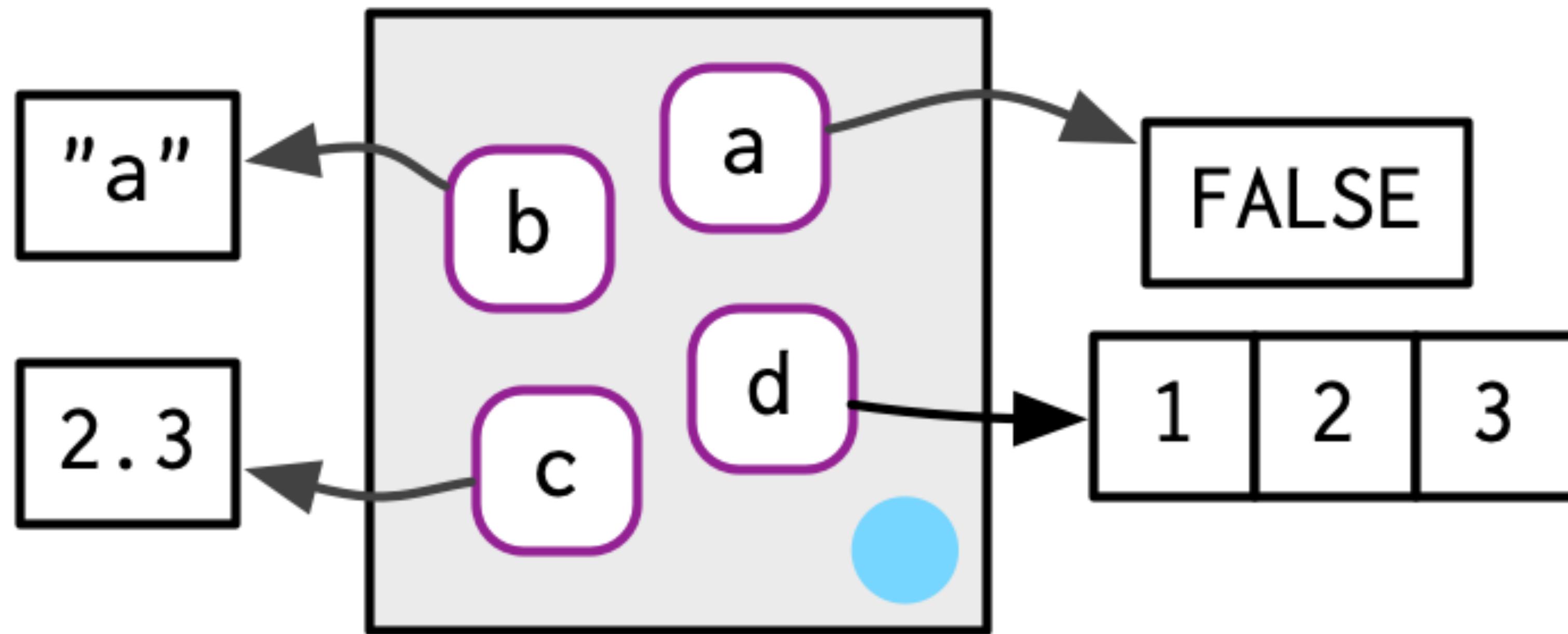


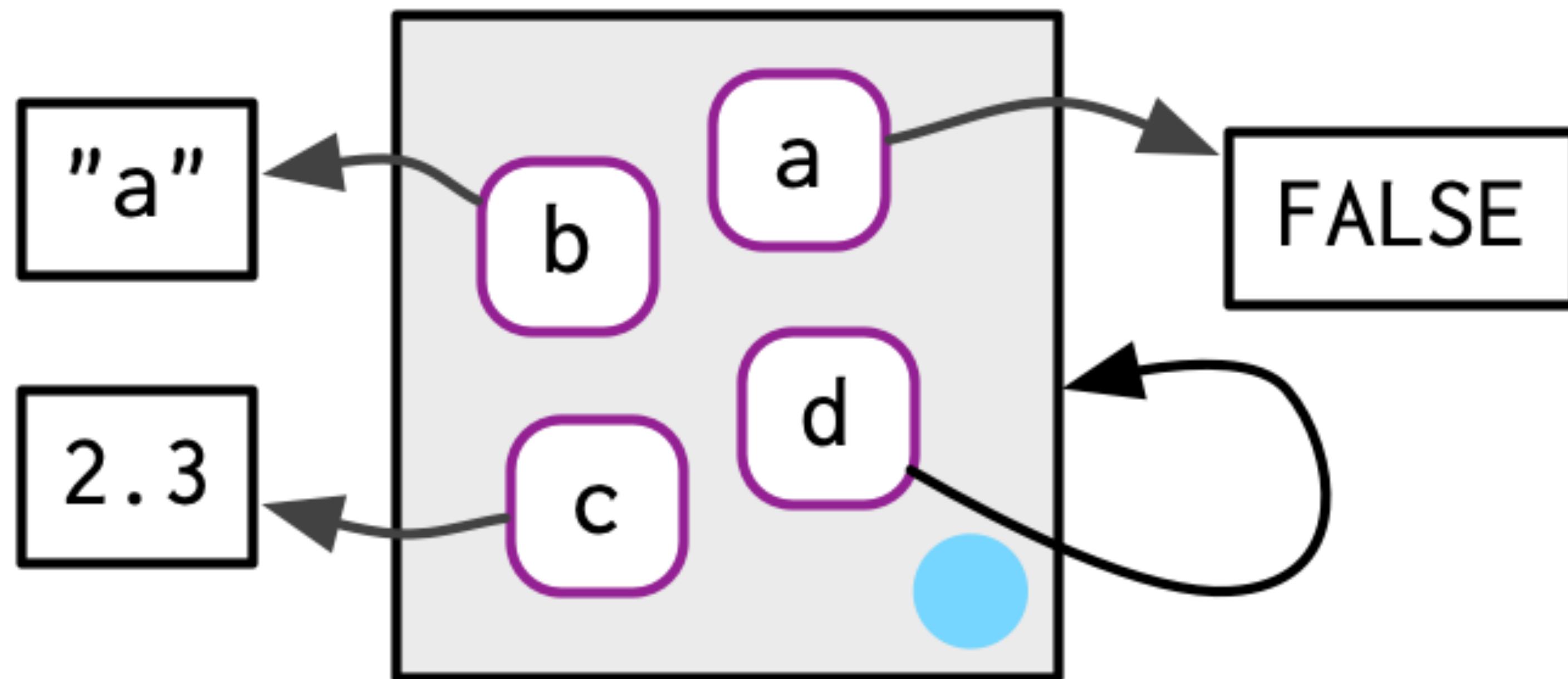
**misc: environments, usethis,  
package structure**

# Environments

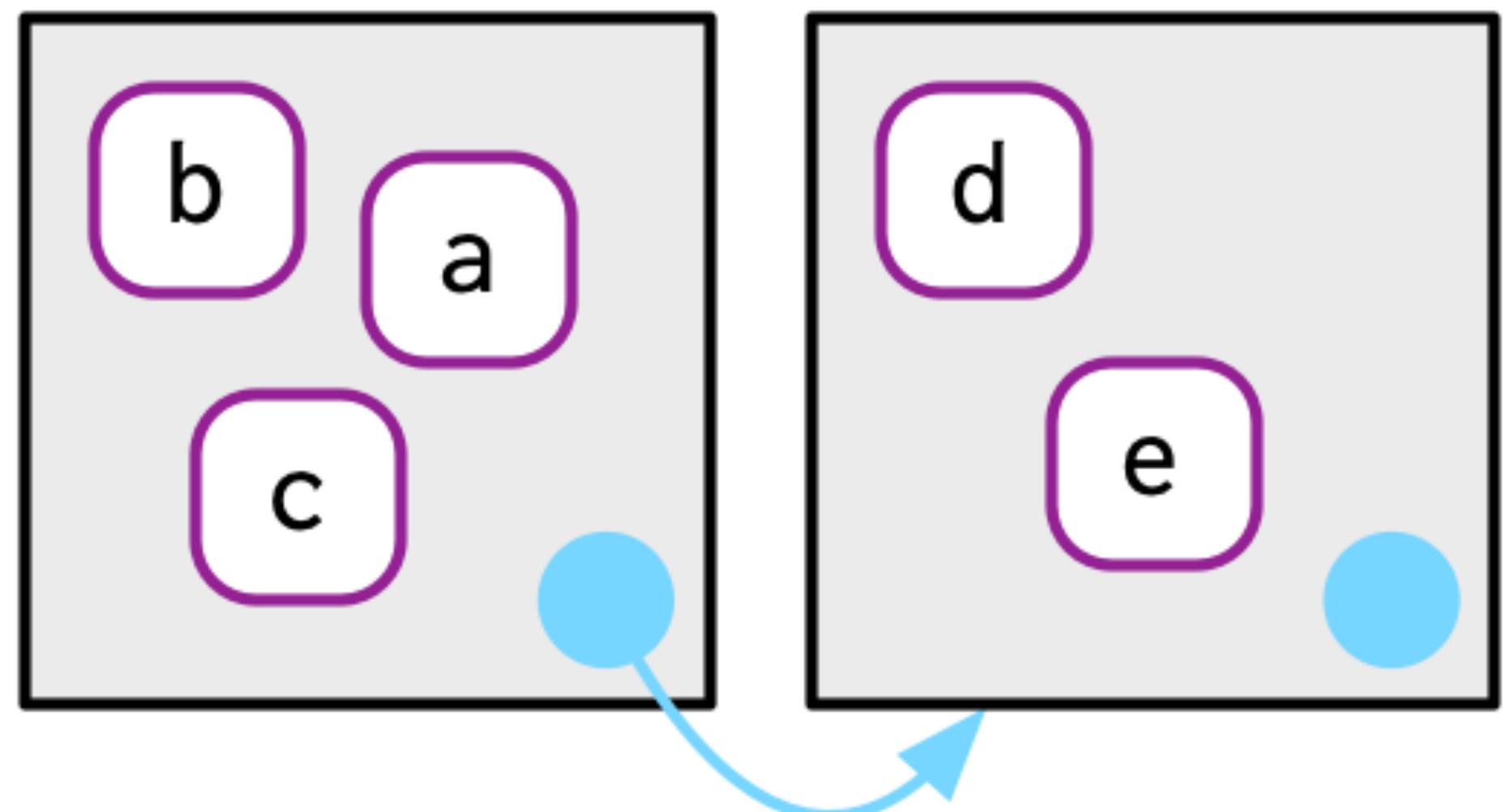
# Environments and bindings



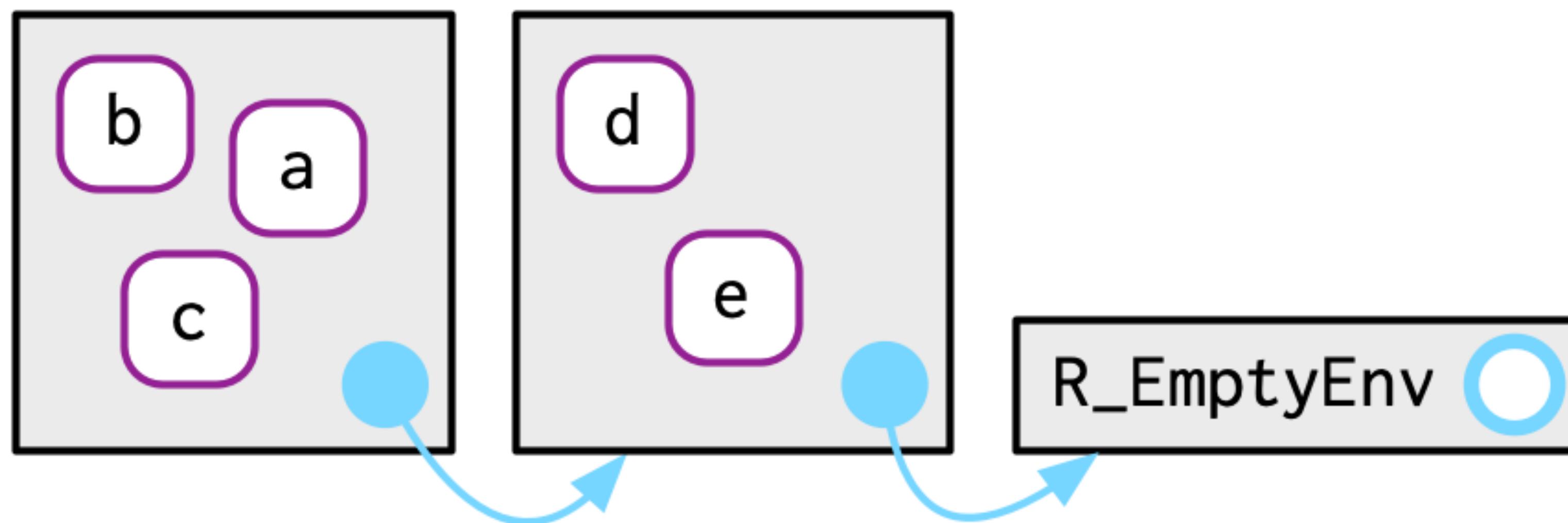
# Can be recursive



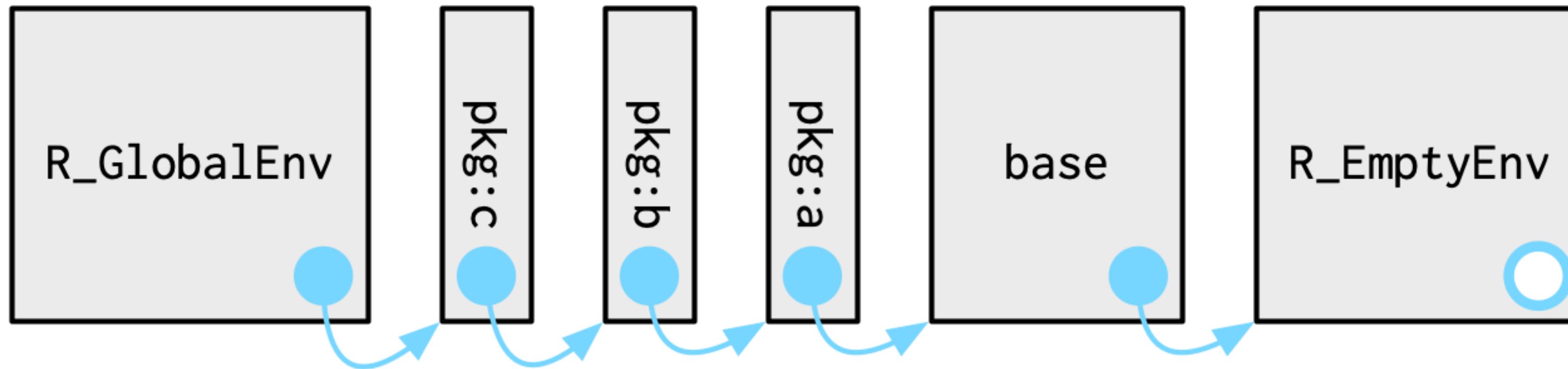
# Parent environments



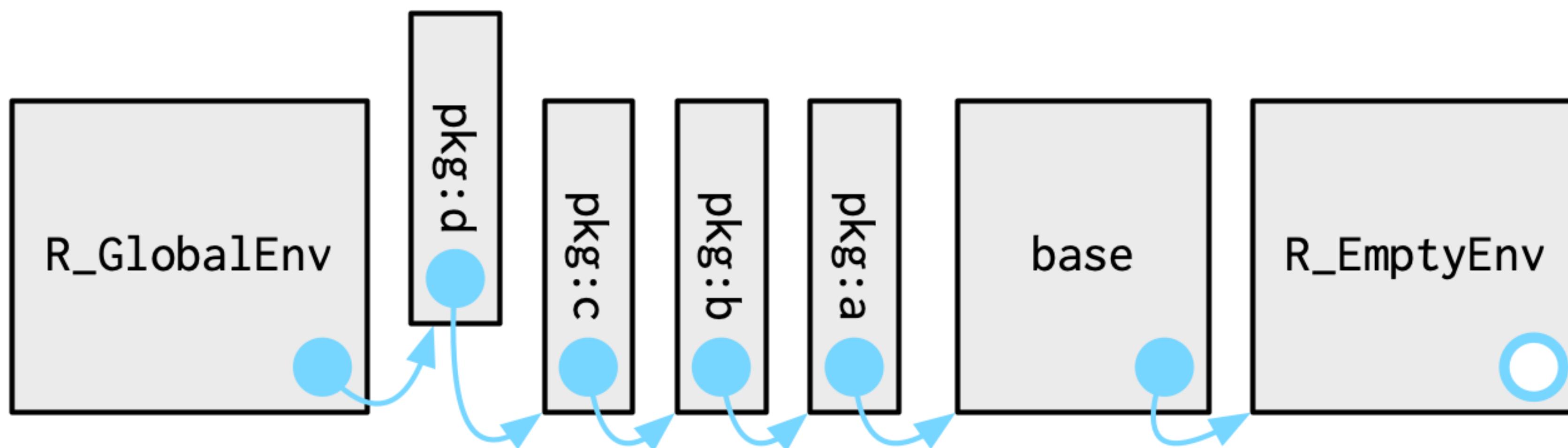
# Empty environment



# Search path



# Search path



<<-

(super assignment)

# Your Turn

If we don't have any packages loaded, what is the second thing in R's search path?

After loading `library(tidyverse)` what is the second thing in R's search path?

Hint: you probably want to review the `search()` function from lecture 10.

# **Hidden \* files**

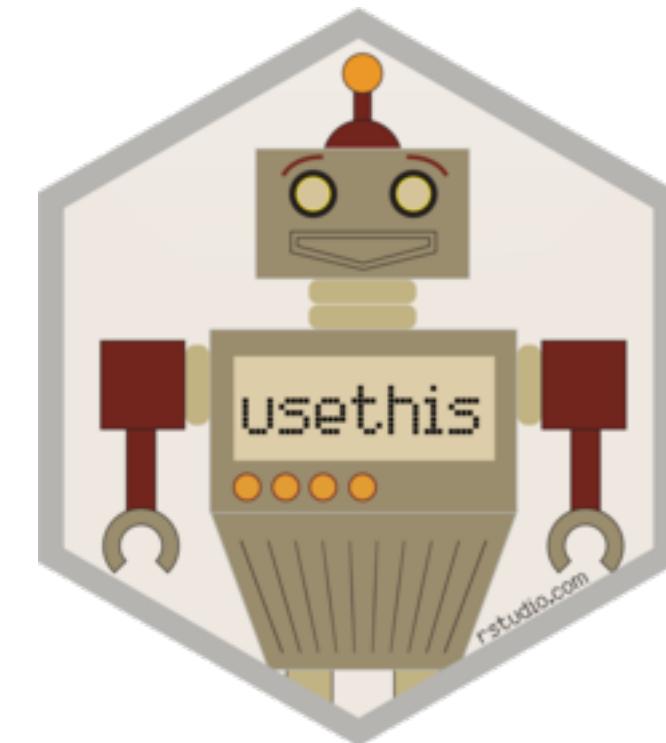
# Use :: to see “Non-Visible functions are asterisked”

```
> methods("plot")  
  
[1] plot.acf*      plot.data.frame*   plot.decomposed.ts* plot.default      plot.dendrogram*  plot.density*  
[7] plot.ecdf       plot.factor*     plot.formula*      plot.function      plot.hclust*      plot.histogram*  
[13] plot.HoltWinters*  plot.isoreg*    plot.lm*        plot.medpolish*   plot.mlm*       plot.ppr*  
[19] plot.prcomp*    plot.princomp*   plot.profile.nls*  plot.raster*      plot.spec*      plot.stepfun  
[25] plot.stl*       plot.table*     plot.ts         plot.tskernel*    plot.TukeyHSD*  
  
see '?methods' for accessing help and source code  
  
> plot.acf  
  
Error: object 'plot.acf' not found  
  
> stats:::plot.acf  
  
function (x, ci = 0.95, type = "h", xlab = "Lag", ylab = NULL,  
        ylim = NULL, main = NULL, ci.col = "blue", ci.type = c("white",  
                  "ma"), max.mfrow = 6, ask = Npgs > 1 && dev.interactive(),  
        mar = if (nser > 2) c(3, 2, 2, 0.8) else par("mar"), oma = if (nser >  
                  2) c(1, 1.2, 1, 1) else par("oma"), mgp = if (nser >  
                  2) c(1.5, 0.6, 0) else par("mgp"), xpd = par("xpd"),  
        cex.main = if (nser > 2) 1 else par("cex.main"), verbose = getOption("verbose"),  
        ...)
```

**usethis**

# usethis

A new package by Jenny Bryan to make your life easier



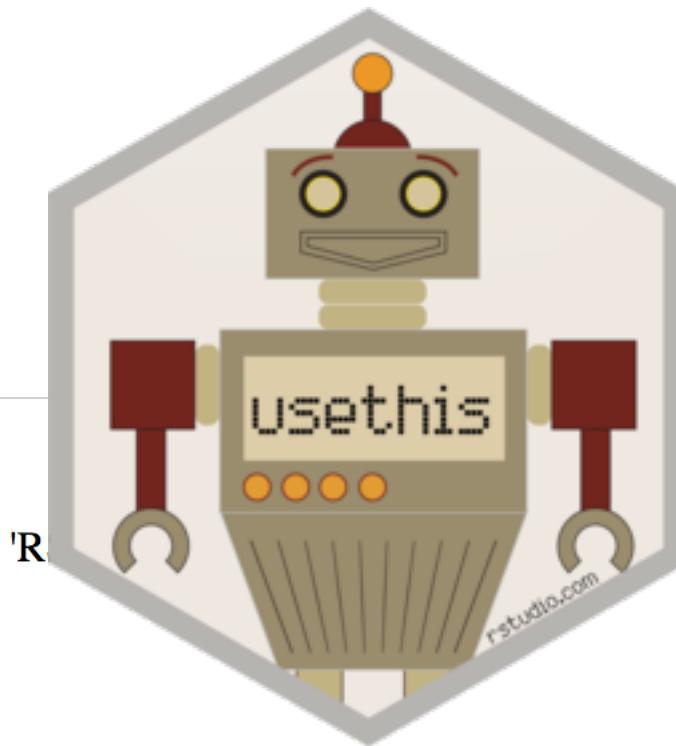
“usethis is a workflow package: it automates repetitive tasks that arise during project setup and development, both for R packages and non-package projects.”

```
install.packages("usethis")
```

or

```
library(devtools)
devtools::install_github("r-lib/usethis")
```

# usethis



## usethis: Automate Package and Project Setup

Automate package and project setup tasks that are otherwise performed manually. This includes setting up unit testing, test coverage, continuous integration, Git, 'GitHub', licenses, 'Rcpp', 'R'

Version: 1.5.0  
Depends: R (≥ 3.1)  
Imports: [clipr](#) (≥ 0.3.0), [clisymbols](#), [crayon](#), [curl](#) (≥ 2.7), [desc](#), [fs](#) (≥ 1.2.0), [gh](#), [git2r](#) (≥ 0.23), [glue](#) (≥ 1.2.0), [purrr](#), [rlang](#), [rprojroot](#) (≥ 1.2), [rstudioapi](#), stats, utils, [whisker](#), [withr](#), [yaml](#)  
Suggests: [covr](#), [knitr](#), [magick](#), [pkgdown](#) (≥ 1.1.0), [rmarkdown](#), [roxygen2](#), [spelling](#) (≥ 1.2), [styler](#) (≥ 1.0.2), [testthat](#) (≥ 2.0.0)  
Published: 2019-04-07  
Author: Hadley Wickham  [aut], Jennifer Bryan  [aut, cre], RStudio [cph, fnd]  
Maintainer: Jennifer Bryan <jenny at rstudio.com>  
BugReports: <https://github.com/r-lib/usethis/issues>  
License: [GPL-3](#)  
URL: <https://usethis.r-lib.org>, <https://github.com/r-lib/usethis>  
NeedsCompilation: no  
Language: en-US  
Materials: [README](#) [NEWS](#)  
CRAN checks: [usethis results](#)

### Downloads:

Reference manual: [usethis.pdf](#)  
Package source: [usethis\\_1.5.0.tar.gz](#)  
Windows binaries: r-devel: [usethis\\_1.5.0.zip](#), r-release: [usethis\\_1.5.0.zip](#), r-oldrel: [usethis\\_1.5.0.zip](#)  
OS X binaries: r-release: [usethis\\_1.5.0.tgz](#), r-oldrel: [usethis\\_1.4.0.tgz](#)  
Old sources: [usethis archive](#)

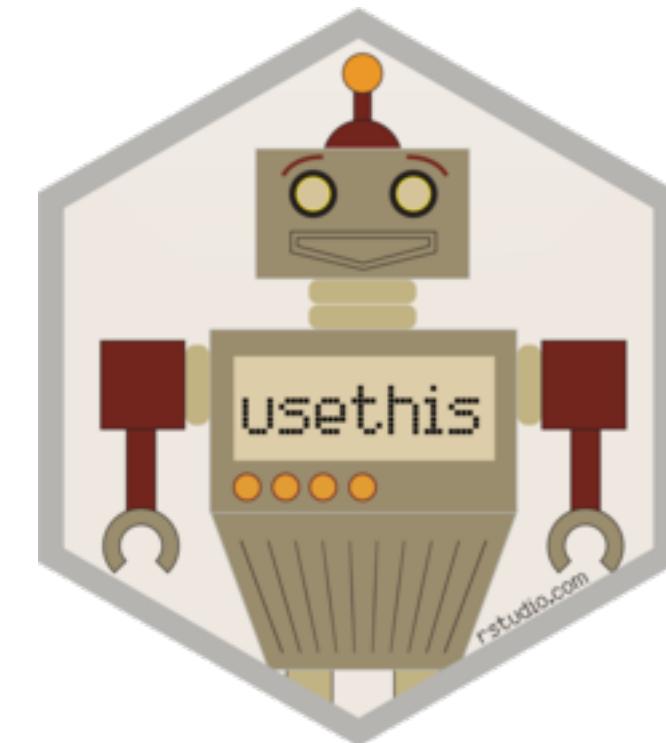
### Reverse dependencies:

Reverse imports: [cartools](#), [codemeta](#), [DataPackageR](#), [devtools](#), [examplestr](#), [gitgadget](#), [latte](#), [piggyback](#), [pkgverse](#), [prodigenr](#), [riskclustr](#), [spectrolab](#), [testthis](#), [uCAREChemSuiteCLI](#), [vdiffr](#)  
Reverse suggests: [BIOMASS](#), [cleanr](#), [clustcurv](#), [CongreveLamsdell2016](#), [drake](#), [eurostat](#), [fakemake](#), [hopit](#), [POUMM](#), [Quartet](#), [rsimsum](#), [rstantools](#), [testthat](#), [vegawidget](#)

### Linking:

Please use the canonical form <https://CRAN.R-project.org/package=usethis> to link to this page.

# usethis



For example

```
git_sitrep()
```

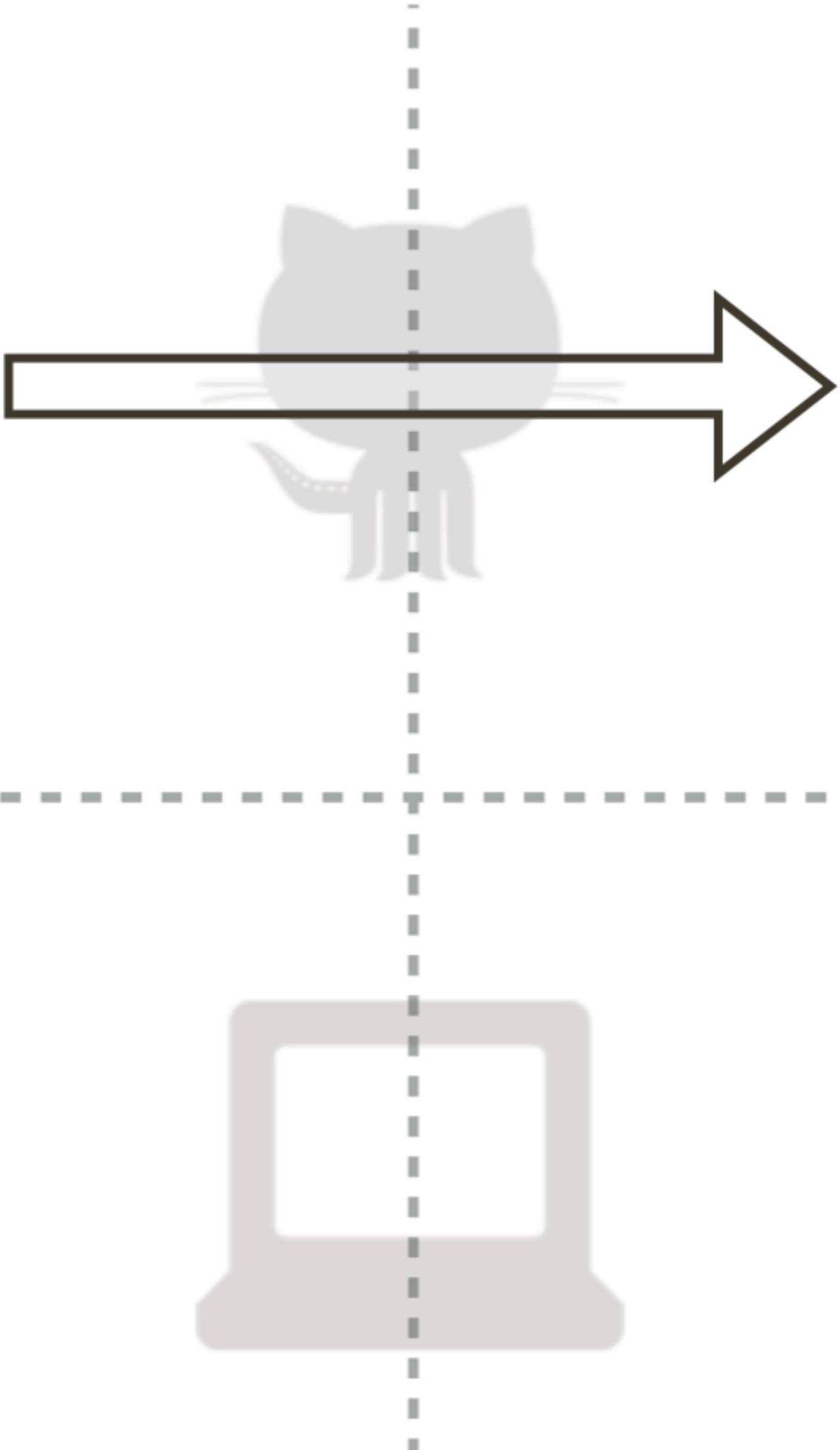
and

```
use_git_config(user.name="Amelia McNamara",  
user.email="amelia.mcnamara@stthomas.edu")
```

Them



You

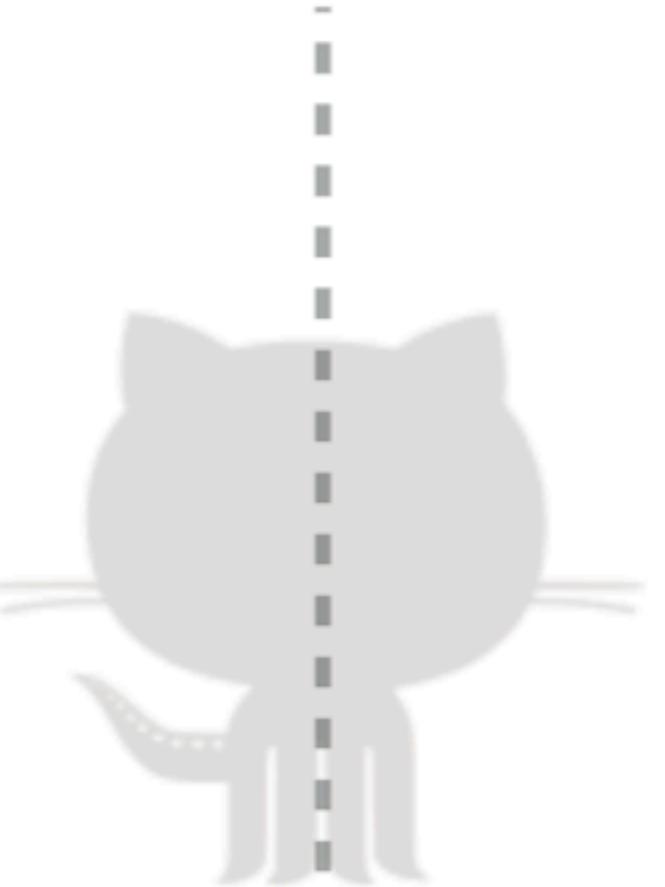


not your  
problem



"fork"

Them



You



origin

not your  
problem



"clone"

Them



You



origin

not your  
problem



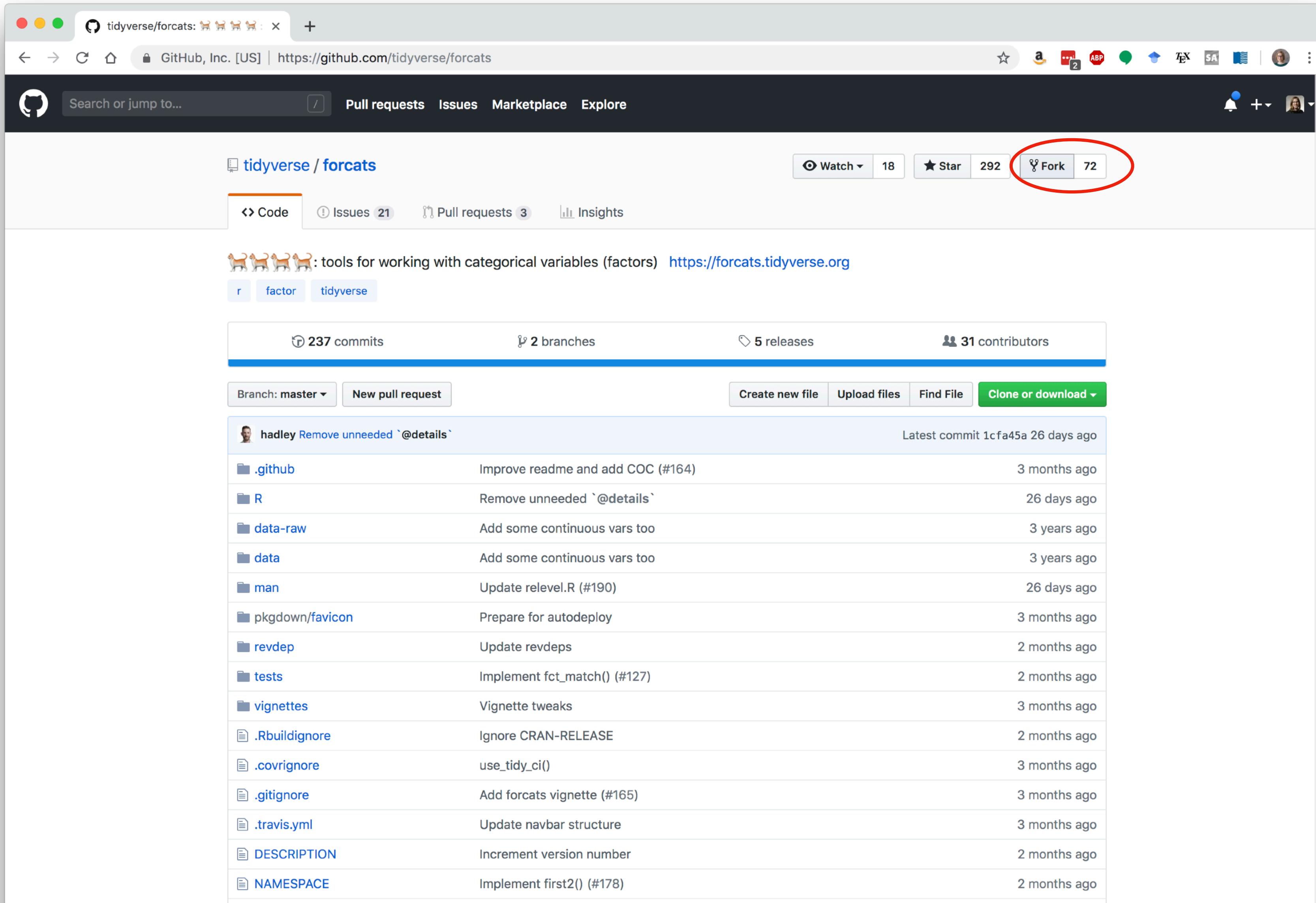
**"fork and clone"**

# Both together with usethis

```
create_from_github("tidyverse/forecast", protocol = "https")
```

**By default, this creates the folder on your Desktop,  
but you can change where it goes using the destdir argument**

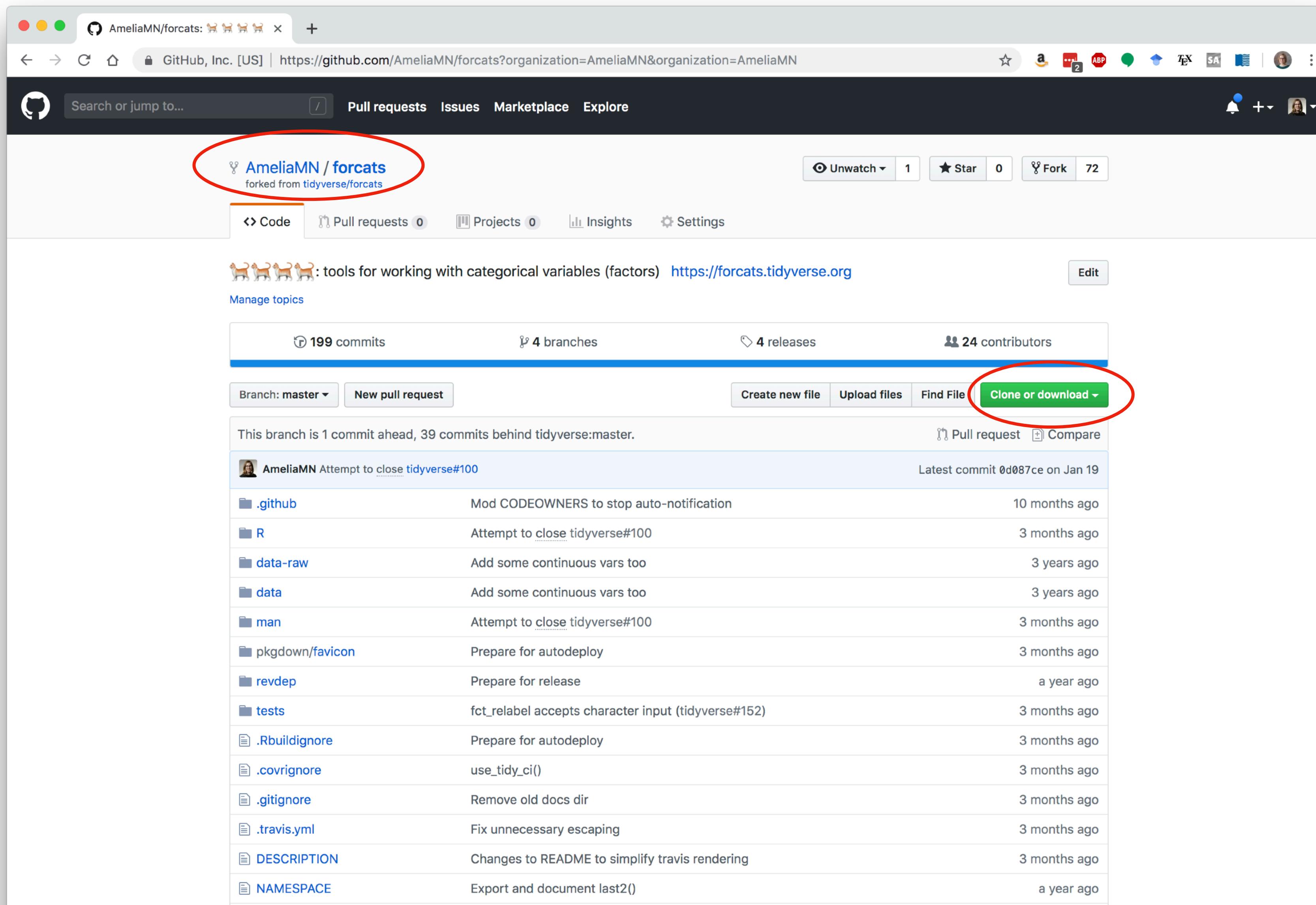
# One way to fork



The screenshot shows a GitHub repository page for `tidyverse/forcats`. The top navigation bar includes links for Pull requests, Issues, Marketplace, and Explore. The repository header displays the name `tidyverse / forcats`, a description about tools for categorical variables, and statistics like 237 commits, 2 branches, 5 releases, and 31 contributors. A red circle highlights the **Fork** button in the top right corner of the header, which has 72 forks. Below the header, there's a list of recent commits by user `hadley`.

Commit	Message	Date
<code>.github</code>	Improve readme and add COC (#164)	3 months ago
<code>R</code>	Remove unneeded `@details`	26 days ago
<code>data-raw</code>	Add some continuous vars too	3 years ago
<code>data</code>	Add some continuous vars too	3 years ago
<code>man</code>	Update relevev.R (#190)	26 days ago
<code>pkgdown/favicon</code>	Prepare for autodeploy	3 months ago
<code>revdep</code>	Update revdeps	2 months ago
<code>tests</code>	Implement fct_match() (#127)	2 months ago
<code>vignettes</code>	Vignette tweaks	3 months ago
<code>.Rbuildignore</code>	Ignore CRAN-RELEASE	2 months ago
<code>.covignore</code>	use_tidy_ci()	3 months ago
<code>.gitignore</code>	Add forcats vignette (#165)	3 months ago
<code>.travis.yml</code>	Update navbar structure	3 months ago
<code>DESCRIPTION</code>	Increment version number	2 months ago
<code>NAMESPACE</code>	Implement first2() (#178)	2 months ago

# One way to clone



# Follow instructions from GitHub-first workflow

The screenshot shows the RStudio Cloud interface for the STAT 360 project. The 'Projects' tab is selected. In the top right, there is a 'New Project' button with a dropdown menu. The 'New Project from Git Repo' option is highlighted with a red box. To the right of the menu is an 'Options' panel with a search bar and project filtering options. Below the menu are three project cards: 'Hw1\_visualization' (created by Amelia Student), 'Untitled Project' (created by Amelia Student), and another 'Untitled Project' (created by Amelia McNamara). Each card has a 'CONTINUE' button and a 'View 1 derived project ...' link.

All Projects

New Project

+ New Project

New Project from Git Repo

Options

Search Projects

CONTINUE Hw1\_visualization

AM Amelia McNamara

Created Feb 5, 2019 11:43 AM View 1 derived project ...

Untitled Project

AS Amelia Student

Created Feb 12, 2019 12:41 PM

Delete Move

List Projects

All Shared with everyone Yours

Sort Projects

By name By date created

# Your Turn

Fork and clone the `forcats` repo onto your “computer” (either physical or RStudio Cloud)

What happens?

The screenshot shows the RStudio interface with the 'forcats' package loaded. The left pane displays the R console output, which includes the standard R startup message, information about the 'forcats' package, and navigation instructions. The right pane shows the project file structure for 'forcats'.

R version 3.5.2 (2018-12-20) -- "Eggshell Igloo"  
Copyright (C) 2018 The R Foundation for Statistical Computing  
Platform: x86\_64-apple-darwin15.6.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.  
You are welcome to redistribute it under certain conditions.  
Type 'license()' or 'licence()' for distribution details.

Natural language support but running in an English locale

R is a collaborative project with many contributors.  
Type 'contributors()' for more information and  
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or  
'help.start()' for an HTML browser interface to help.  
Type 'q()' to quit R.

>

You should now have an RStudio project open with all the code from the `forcats` package

You can also go on GitHub to view the main version of the code, at <https://github.com/tidyverse/forcats> and your version of the code, at [https://github.com/\[whatever your GitHub username is\]/forcats](https://github.com/[whatever your GitHub username is]/forcats). For example, mine is at <https://github.com/AmeliaMN/forcats>

Environment History Connections Build Git

Import Dataset

Global Environment

Environment is empty

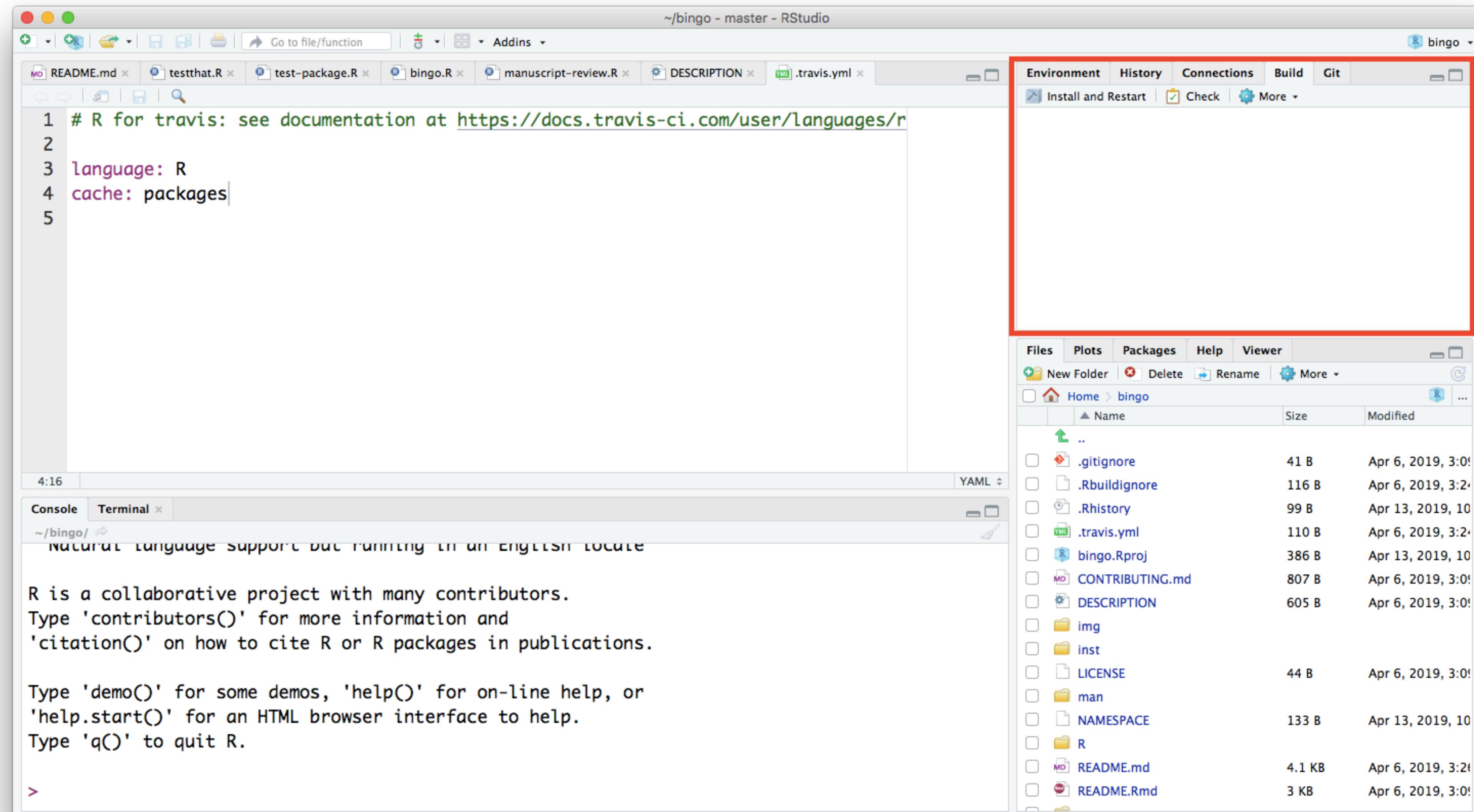
Files Plots Packages Help Viewer

New Folder Delete Rename More

Home > Desktop > forcats

Name	Size	Modified
..	52 B	Apr 16, 2019, 12:57 PM
.gitignore	217 B	Apr 16, 2019, 12:57 PM
.Rbuildignore	537 B	Apr 16, 2019, 12:57 PM
.travis.yml	1.7 KB	Apr 16, 2019, 12:57 PM
_pkgdown.yml	176 B	Apr 16, 2019, 12:57 PM
codecov.yml	598 B	Apr 16, 2019, 12:57 PM
cran-comments.md		
data		
data-raw		
DESCRIPTION	1 KB	Apr 16, 2019, 12:57 PM
forcats.Rproj	384 B	Apr 16, 2019, 12:58 PM
man		
NAMESPACE	795 B	Apr 16, 2019, 12:57 PM
NEWS.md	4 KB	Apr 16, 2019, 12:57 PM
pkgdown		
R		
README.md	4.1 KB	Apr 16, 2019, 12:57 PM
README.Rmd	3.7 KB	Apr 16, 2019, 12:57 PM
revdep		
tests		
vianettes		

# We should now have a build tab

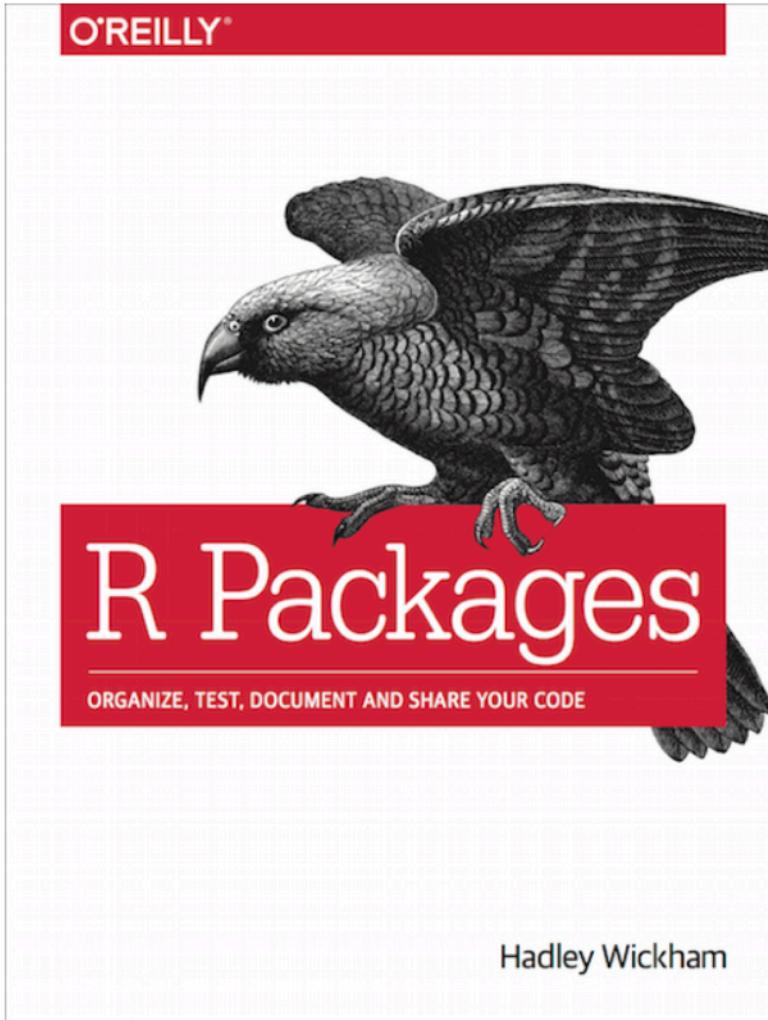


# Your Turn

Click the Install and Restart button on the Build pane.  
What happens?

# R packages

This is the book site for “**R packages**”. It was published with O'Reilly in April 2015. You can [order](#) a copy from Amazon.



Packages are the fundamental units of reproducible R code. They include reusable R functions, the documentation that describes how to use them, and sample data. In this section you'll learn how to turn your code into packages that others can easily download and use. Writing a package can seem overwhelming at first. So start with the basics and improve it over time. It doesn't matter if your first version isn't perfect as long as the next version is better.

## Getting started

- [Introduction](#)
- [Package structure](#)

## Package components

- [Code \(R/\)](#)
- [Package metadata \(DESCRIPTION\)](#)
- [Object documentation \(man/\)](#)
- [Vignettes \(vignettes/\)](#)
- [Testing \(tests/\)](#)
- [Namespaces \(NAMESPACE\)](#)
- [Data \(data/\)](#)
- [Compiled code \(src/\)](#)
- [Installed files \(inst/\)](#)
- [Other components](#)

## Best practices

- [Git and GitHub](#)
- [Checking](#)
- [Release](#)

# Your Turn

Poke around in the package for a bit. What kinds of files are in the R directory? What do they look like? What kinds of files are in man? What do they look like?

# Your Turn

Make a change to the documentation of one of the functions (for example, `fct_recode`). Save your change. Install and Restart. If you `? your function`, do you see the change?

`?fct_recode`

# Your Turn

What button do you have to click to get your change to the documentation to show up? What files are changed?