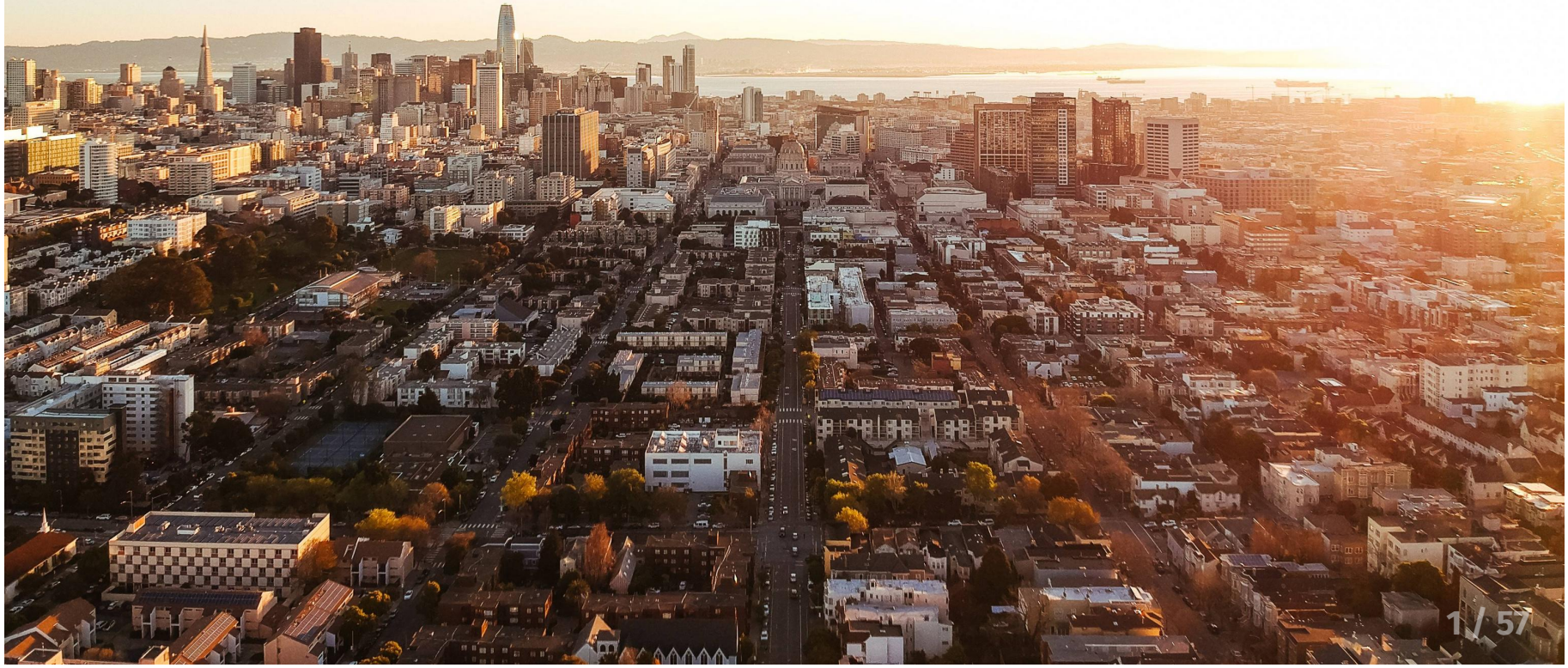
# My Organization's First R package

## Document R Code

rstudio::conf(2020L)



local

```
open 03-document/03_avalanchr.rproj
```

```
open module 03-document
```

# ?mean

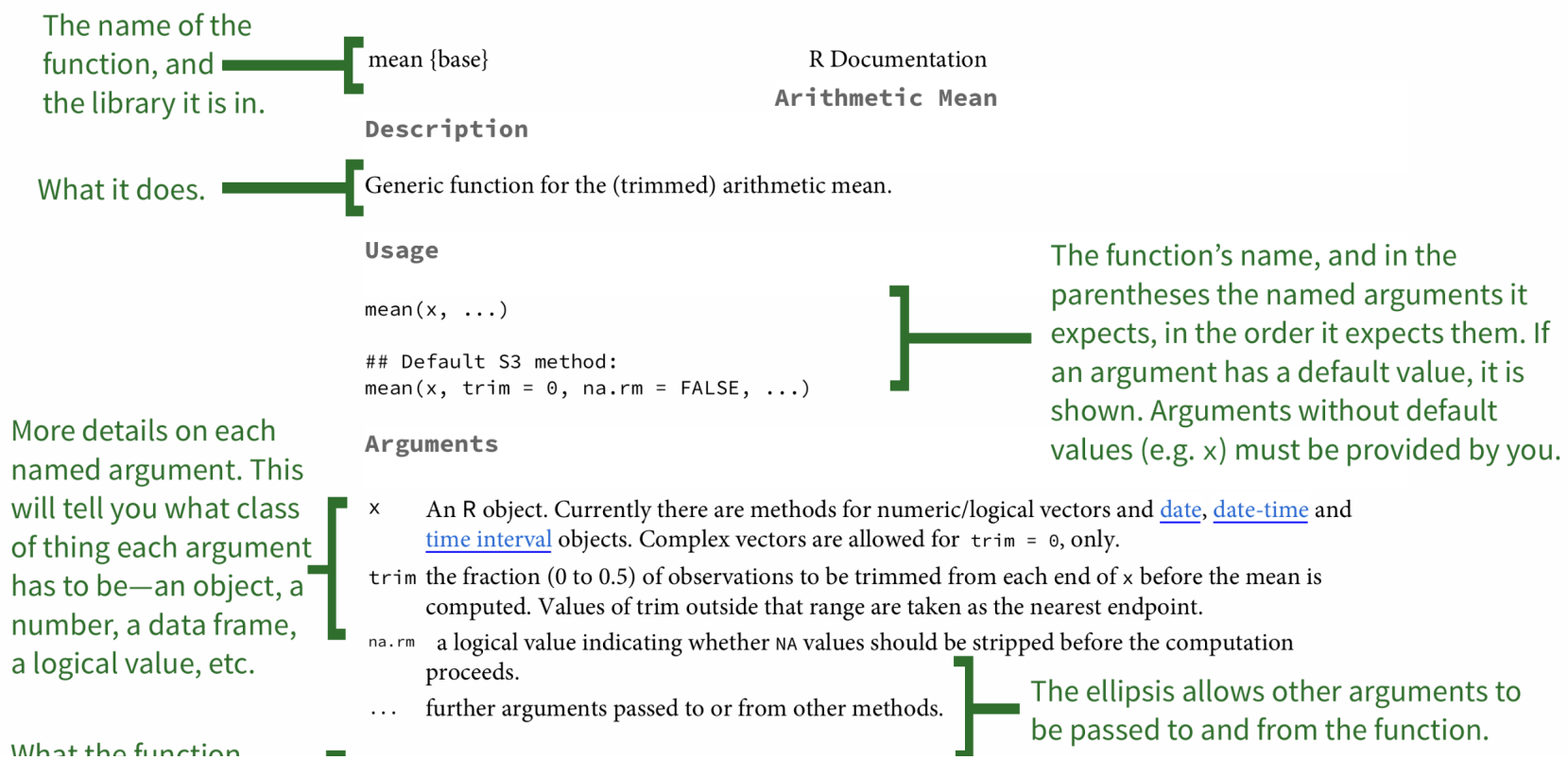



Image by Kieran Healy

# roxygen2: In-Line Documentation for R

## roxygen2: In-Line Documentation for R

**Write documentation with your functions**

## roxygen2: In-Line Documentation for R

Write documentation with
your functions

render with document()

# Insert roxygen skeleton

Code > Insert Roxygen Skeleton

# Insert roxygen skeleton

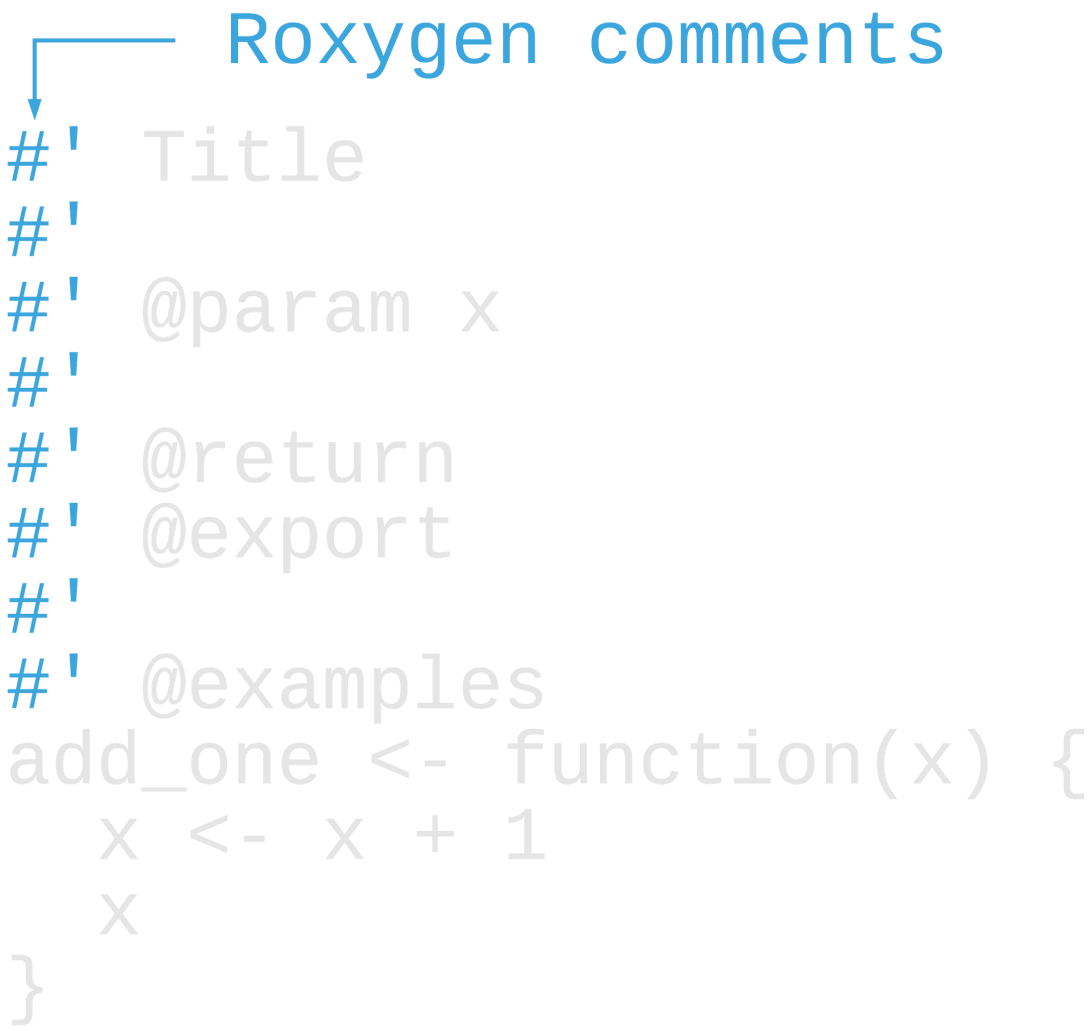
Code > Insert Roxygen Skeleton

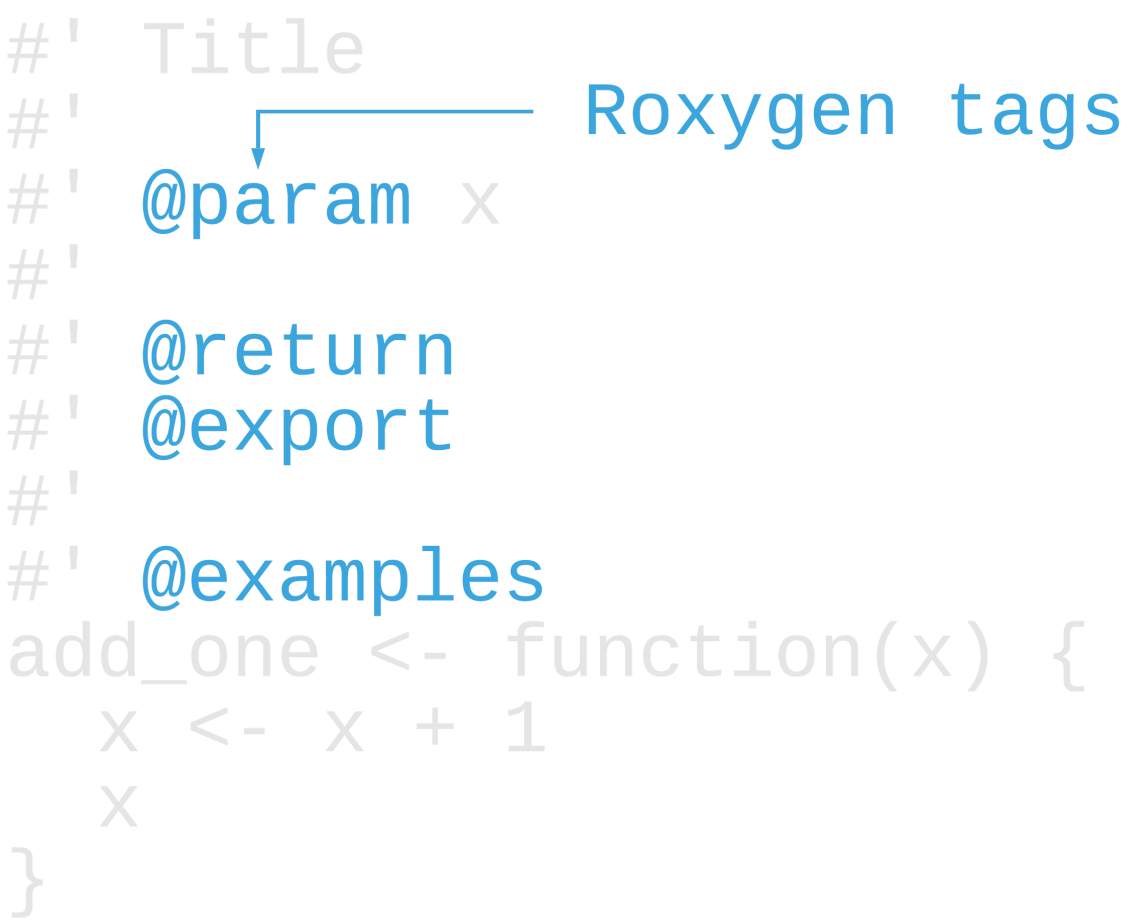
**Ctrl/Cmd + Shift + Alt/Opt + R**

```
add_one <- function(x) {
  x <- x + 1
  x
}
```

## Insert Roxygen Skeleton

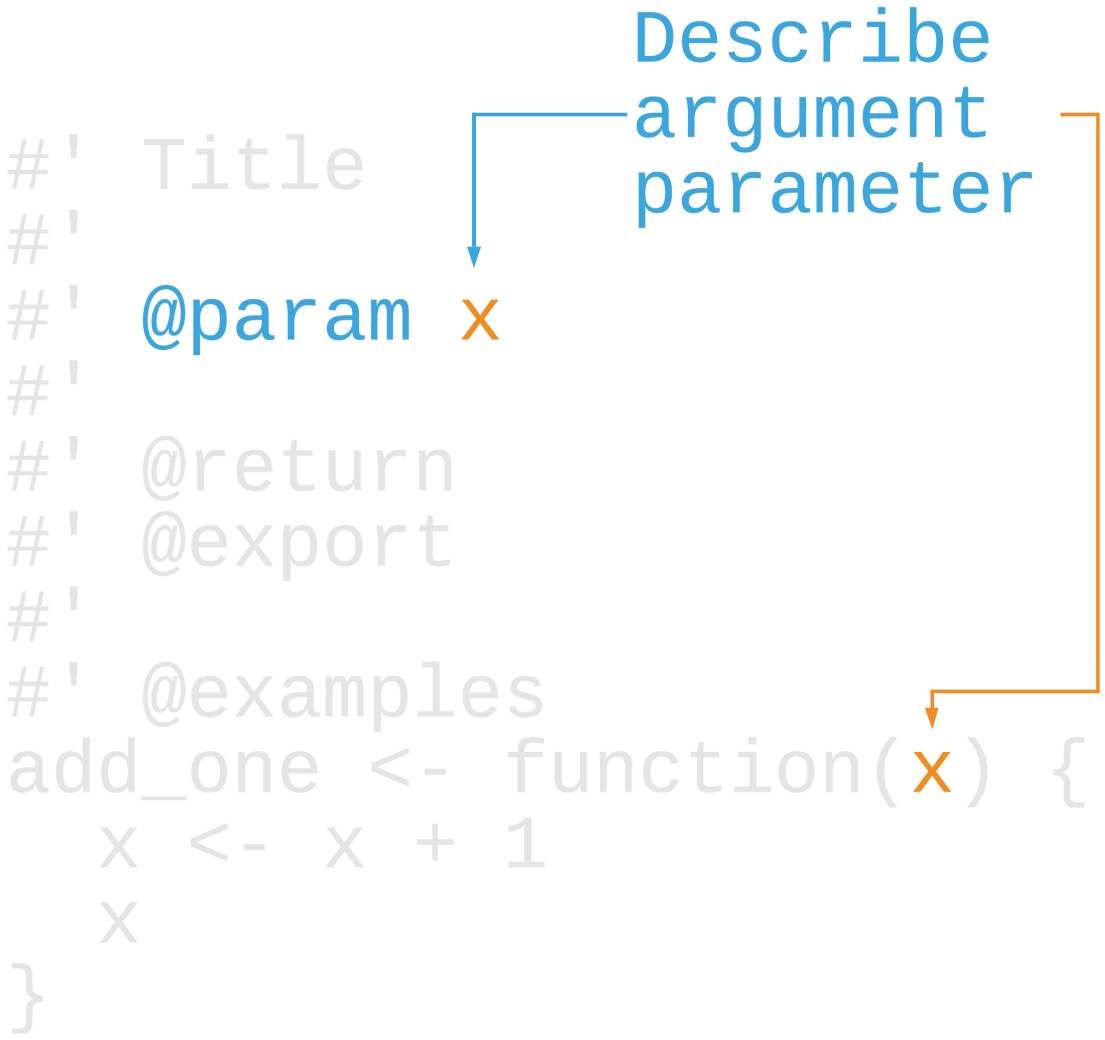
```
#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
  x <- x + 1
  x
}
```


Roxygen comments
#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
x <- x + 1
x
}


#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
x <- x + 1
x
}
Roxygen tags

```
#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
  x <- x + 1
  x
}
```

Description and Details


Describe
argument
parameter
#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
x <- x + 1
x
}

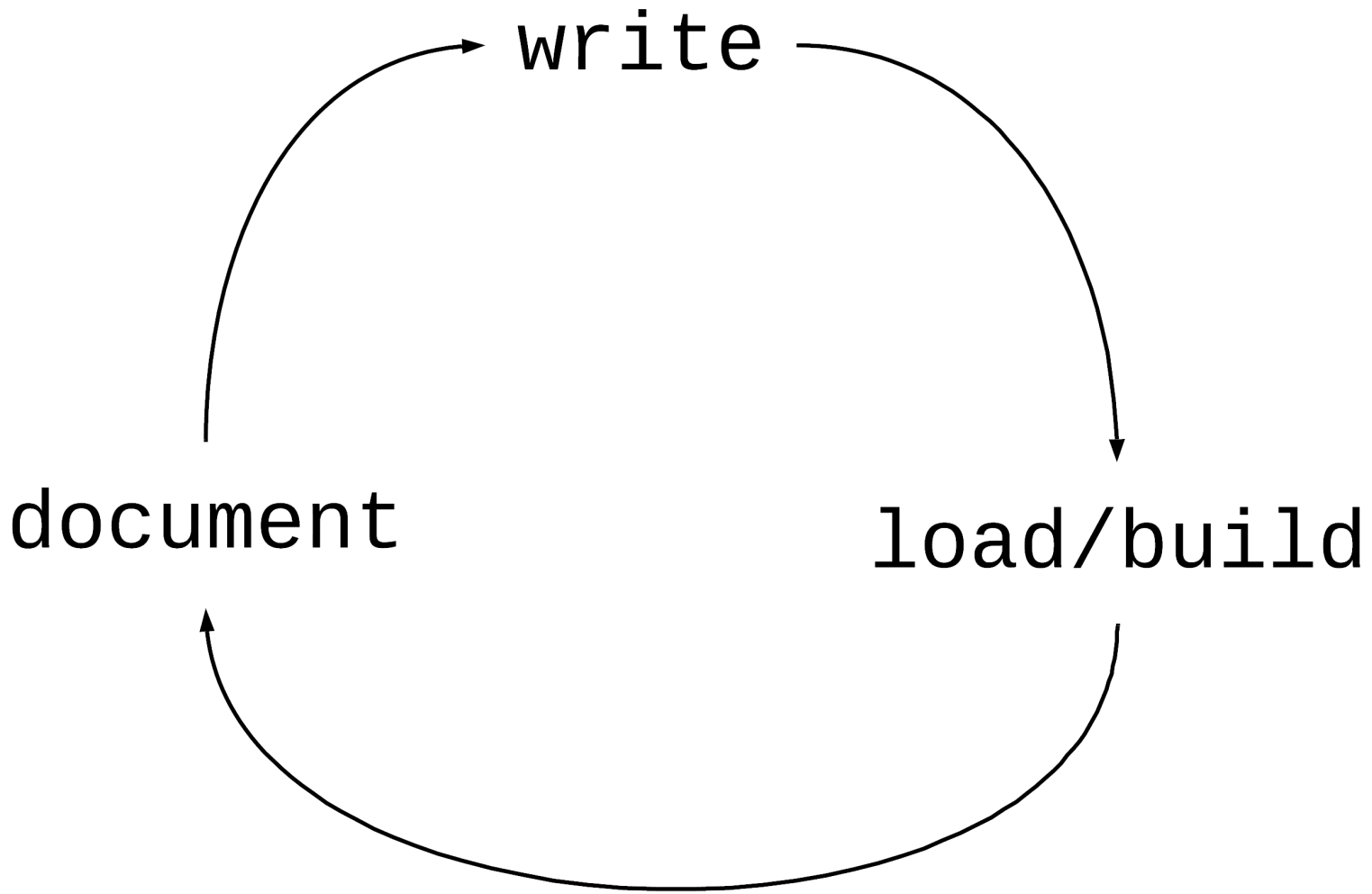
```
#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
  x <- x + 1
  x
}
```

Describe what is returned


#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#' @examples
add_one <- function(x) {
x <- x + 1
x
}
Export the function pkg::add_one()

```
#' Title
#'
#' @param x
#'
#' @return
#' @export
#'
#'  @examples
add_one <- function(x) {
  x <- x + 1
  x
}
```

write examples


write
document
load/build

# Write roxygen, run document()

# Write roxygen, run document()

```
theme_mako <- function(base_size = 14) {
  ggplot2::theme_dark(base_size = base_size) +
    ggplot2::theme(
      panel.background = ggplot2::element_rect(fill = "#0D98BA")
    )
}
```

# Write roxygen, run document()

```r
#' A dark theme with a mako-like background
#'
#' @param base_size base font size
#'
#' @return a ggplot2 theme
#' @export
#'
#' @examples
#'
#' ggplot2::quickplot(iris$Sepal.Length) + theme_mako()
#'
theme_mako <- function(base_size = 14) {
  ggplot2::theme_dark(base_size = base_size) +
    ggplot2::theme(
      panel.background = ggplot2::element_rect(fill = "#0D98BA")
    )
}
```

```
document()
  shinRa
  ├── .Rbuildignore
  ├── .gitignore
  ├── DESCRIPTION
  ├── NAMESPACE
  ├── R/
  │   └── themes.R
  ├── man
  │   └── theme_mako.Rd
  └── shinRa.Rproj
```

# man/theme_mako.Rd

```
## % Generated by roxygen2: do not edit by hand
## % Please edit documentation in R/themes.R
## \name{theme_mako}
## \alias{theme_mako}
## \title{A dark theme with a mako-like background}
## \usage{
## theme_mako(base_size = 14)
## }
## \arguments{
## \item{base_size}{base font size}
## }
## \value{
## a ggplot2 theme
## }
## \description{
## A dark theme with a mako-like background
## }
## \examples{
##
## ggplot2::quickplot(iris$Sepal.Length) + theme_mako()
##
## }
```

# ?theme_mako

theme_mako {shinRa}

## A dark theme with a mako-like background

### Description

A dark theme with a mako-like background

### Usage

```
theme_mako(base_size = 14)
```

### Arguments

| | |
|---|---|
| base_size | base font size |

### Value

a ggplot2 theme

### Examples

```
ggplot2::quickplot(iris$Sepal.Length) + theme_mako()
```

---

## Syntax

**LaTeX like. See more at https://r-pkgs.org/man.html**

use_roxygen_md() **lets you write in Markdown. See more at https://roxygen2.r-lib.org/articles/rd-formatting.html**

# Your Turn 1

**Open the NAMESPACE file. What do you see?**

**Let's add documentation. Run** use_roxygen_md()

**Open** r/themes.R**. Insert a roxygen skeleton for** theme_avalanche()**.**

**Change the title to "AVALANCHE ggplot2 themes"**

**Hit Enter/Return twice after the title. Make sure the new lines start with** #'**. Add this text: "Minimalistic ggplot themes for use on AVALANCHE reports."**

**Run** document() **or press** Ctrl/Cmd + Shift + D**. Read the help page for your function with** ? theme_avalanche**.**

**Finally, look at the NAMESPACE file again. What changed?**

## Your Turn 1

```
exportPattern("^[^\\.]")
```

## Your Turn 1

```r
#' AVALANCHE ggplot2 themes
#'
#' Minimalistic ggplot themes for use on AVALANCHE reports.
#'
#' @param base_size
#' @param ...
#'
#' @return
#' @export
#'
#' @examples
theme_avalanche <- function(base_size = 14, ...) {
  ggplot2::theme_minimal(base_size = base_size, ...) +
    ggplot2::theme(panel.grid.minor = ggplot2::element_blank())
}
```

## Your Turn 1

```
# Generated by roxygen2: do not edit by hand

export("%>%")
export(db_con)
export(get_resident_data)
export(theme_avalanche)
export(theme_avalanche_h)
export(theme_avalanche_v)
import(data.table)
importFrom(magrittr,"%>%")
```

# Argument descriptions

```
#' [other roxygen code]
#' @param x The name of a database to retrieve
get_data <- function(x) {
  # code to get data
}
```

# Argument descriptions: @inheritParams

```r
#' [other roxygen code]
#' @param x The name of a database to retrieve
get_data <- function(x) {
  # code to get data
}

#' [other roxygen code]
filter_table <- function(x) {
  tbl <- get_data(x)
  # code to filter data
}
```

# Argument descriptions: @inheritParams

```r
#' [other roxygen code]
#' @param x The name of a database to retrieve
get_data <- function(x) {
  # code to get data
}

#' [other roxygen code]
#' @inheritParams get_data
filter_table <- function(x) {
  tbl <- get_data(x)
  # code to filter data
}
```

# Examples

## Examples can be any kind of R code

```
#' [other roxygen code]
#' @examples
#'
#' library(dplyr)
#' get_data("daily_actice_users") %>%
#'   filter(date == lubridate::today())
get_data <- function(x) {
  # code to get data
}
```

# Examples

## Examples can be any kind of R code

```
#' [other roxygen code]
#' @examples
#'
#' library(dplyr)
#' get_data("daily_actice_users") %>%
#'   filter(date == lubridate::today())
get_data <- function(x) {
  # code to get data
}
```

**But any packages used need to be imported or suggested!**

# Examples

**If you don't want to run examples, wrap them in** dontrun{} **or** donttest{}

```
#' [other roxygen code]
#' @examples
#'
#' dontrun{
#'   get_data("daily_active_users")
#' }
get_data <- function(x) {
  # code to get data
}
```

# Your Turn 2

**Let's keep working on the documentation for** theme_avalanche()**:**

**Remove** @param base_size **and replace it with: @inheritParams ggplot2::theme_minimal**

**For** @param ..., **add: Additional arguments passed to [ggplot2::theme_minimal()]**

**For** @return**, add: a ggplot theme.**

**For** @examples**, add two line breaks (make sure the new lines have roxygen comments!).**
**Add this code:** ggplot2::qplot(iris$Sepal.Length) + theme_avalanche()

**Rebuild the documentation and check the help page.**

## Your Turn 2

```
#' AVALANCHE ggplot2 themes
#'
#' Minimalistic ggplot themes for use on AVALANCHE reports.
#'
#' @inheritParams ggplot2::theme_minimal
#' @param ... Additional arguments passed to [ggplot2::theme_minimal
#'
#' @return a ggplot theme.
#' @export
#'
#' @examples
#'
#' ggplot2::qplot(iris$Sepal.Length) + theme_avalanche()
#'
theme_avalanche <- function(base_size = 14, ...) {
  ggplot2::theme_minimal(base_size = base_size, ...) +
    ggplot2::theme(panel.grid.minor = ggplot2::element_blank())
}
```

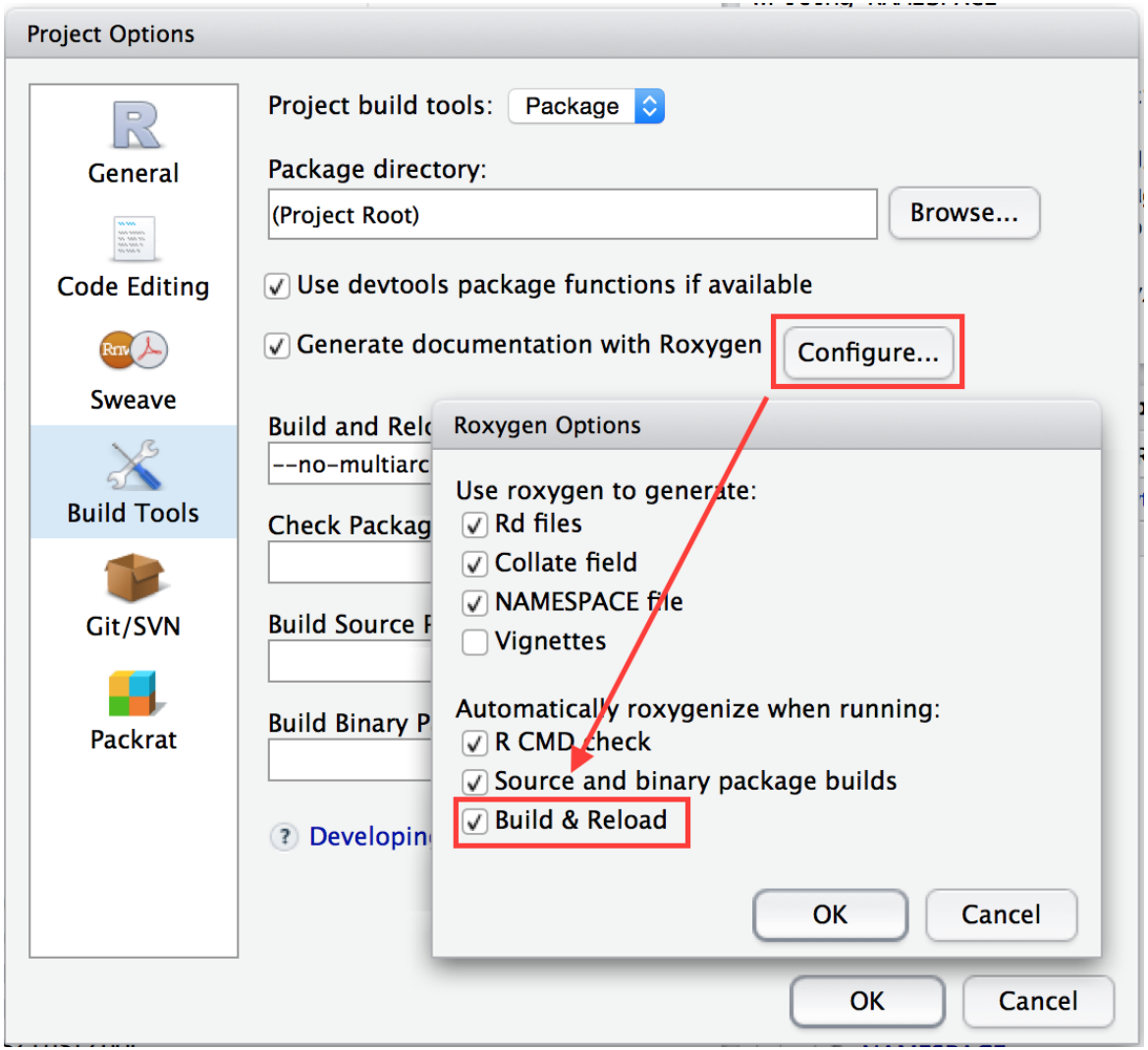



Image from R Packages, ed. 2

Quoth Jenny Bryan:

1. Use functions.
2. A few little functions >> a monster function
3. Small well-named helper >> commented code

## Helper functions

```
plot_daus <- function(daily_users) {
  daily_users <- daily_users %>%
    dplyr::mutate(date = as.Date(time)) %>%
    dplyr::group_by(date)
    dplyr::select(user_id) %>%
    dplyr::distinct() %>%
    dplyr::summarize(n = dplyr::n())

  ggplot2::ggplot(ggplot2::aes(daily_users, x, n)) +
    ggplot2::geom_col()
}
```

## Helper functions

```
plot_daus <- function(daily_users) {
  daily_users <- count_daus(daily_users)

  ggplot2::ggplot(ggplot2::aes(daily_users, x, n)) +
    ggplot2::geom_col()
}

count_daus <- function(daily_users) {
  daily_users %>%
    dplyr::mutate(date = as.Date(time)) %>%
    dplyr::group_by(date)
    dplyr::select(user_id) %>%
    dplyr::distinct() %>%
    dplyr::summarize(n = dplyr::n())
}
```

## Show of Hands

## Which of these functions will be added to NAMESPACE?

```r
#' Plot daily active users
#'
#' @param ...
#' @export
plot_daus <- function(...) {
  # ... code to plot daily active users
}

#' Count daily active users
#'
#' @param ...
count_daus <- function(...) {
  # ... code to count daily active users
}
```

## Show of Hands

## Which of these functions will be added to NAMESPACE?

```r
#' Plot daily active users
#'
#' @param ...
#' @export
plot_daus <- function(...) {
  # ... code to plot daily active users
}

#' Count daily active users
#'
#' @param ...
count_daus <- function(...) {
  # ... code to count daily active users
}
```

## Exported functions vs internal functions

@export = shinRa::plot_daus()

library(shinRa)

plot_daus() ✓

## Exported functions vs internal functions

**NO** @export = shinRa:::count_daus()

```
library(shinRa)

count_daus() 🤔🤔🤔🤔🤔🤔
```

## Strategies for documenting helper functions:

1. Don't document them 🤷‍♀️
2. @keyword internal
3. @nomd

# Joining documentation

```r
#' [other roxygen code]
#' @param x The name of a database to retrieve
get_data <- function(x) {
  # code to get data
}

#' [other roxygen code]
#' @param x @inheritParam get_data
filter_table <- function(x) {
  tbl <- get_data(x)
  # code to filter data
}
```

# Joining documentation

```
#' [other roxygen code]
#' @param x The name of a database to retrieve
get_data <- function(x) {
  # code to get data
}

#' @rdname get_data
#' @export
filter_table <- function(x) {
  tbl <- get_data(x)
  # code to filter data
}
```

# Joining documentation

```
#' [other roxygen code]
#' @param x The name of a database to retrieve
#' @name data_helpers
NULL

#' @rdname data_helpers
#' @export
get_data <- function(x) {
  # code to get data
}

#' @rdname data_helpers
#' @export
filter_table <- function(x) {
  tbl <- get_data(x)
  # code to filter data
}
```

# Joining documentation

```r
#' [other roxygen code]
#' @param x The name of a database to retrieve
#' @name data_helpers
NULL

#' @rdname data_helpers
#' @export
get_data <- function(x) {
  # code to get data
}

#' @rdname data_helpers
#' @export
filter_table <- function(x) {
  tbl <- get_data(x)
  # code to filter data
}
```

## Your Turn 3

**In** R/themes.R**, join the documentation of** theme_avalanche_h() **and** theme_avalanche_v() **to** theme_avalanche() **by replacing the roxygen code for the first two functions with "#' @rdname theme_avalanche".**

**Make sure both functions still have an export tag, as well!**

**Re-render the documentation and read the help page for** ?theme_avalanche_h()

## Your Turn 3

```
#' @rdname theme_avalanche
#' @export
theme_avalanche_h <- function(base_size = 14, ...) {
  ggplot2::theme_minimal(base_size = base_size, ...) +
    ggplot2::theme(
      panel.grid.minor = ggplot2::element_blank(),
      panel.grid.major.x = ggplot2::element_blank()
    )
}

#' @rdname theme_avalanche
#' @export
theme_avalanche_v <- function(base_size = 14, ...) {
  ggplot2::theme_minimal(base_size = base_size, ...) +
    ggplot2::theme(
      panel.grid.minor = ggplot2::element_blank(),
      panel.grid.major.y = ggplot2::element_blank()
    )
}
```

# Package documentation

## use_package_doc()

```
## ✔ Setting active project to '/private/var/folders/03/9x7925g54mncswxx
## ✔ Writing 'R/shinRa-package.R'
```

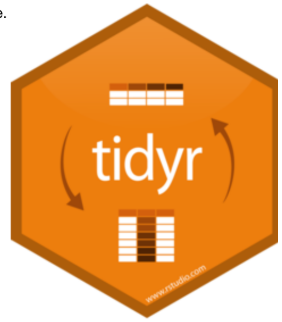
# help("tidyr")

tidyr-package {tidyr} R Documentation

## tidyr: Tidy Messy Data

### Description

Tools to help to create tidy data, where each column is a variable, each row is an observation, and each cell contains a single value. 'tidyr' contains tools for changing the shape (pivoting) and hierarchy (nesting and 'unnesting') of a dataset, turning deeply nested lists into rectangular data frames ('rectangling'), and extracting values out of string columns. It also includes tools for working with missing values (both implicit and explicit).




### Author(s)

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Authors:

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Other contributors:

- RStudio [copyright holder]

### See Also

Useful links:

- https://tidyr.tidyverse.org
- https://github.com/tidyverse/tidyr
- Report bugs at https://github.com/tidyverse/tidyr/issues

---

[Package *tidyr* version 1.0.0 Index]

# pkgdown

# pkgdown

use_pkgdown()

**Renders documentation, README, vignettes, and more as a website.**

## Here's a good example...

https://roxygen2.r-lib.org/


**There are a lot more documentation tricks.**

**Read the vignettes!**