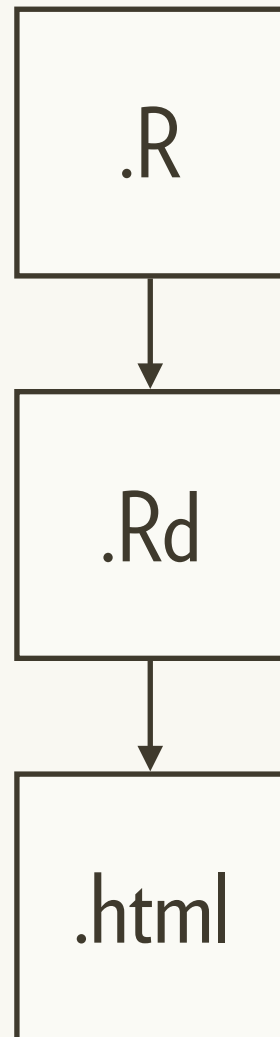# Documentation

December 2017

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Function-level with roxygen2

.R → .Rd → .html

Package-level with rmarkdown

.Rmd → .md → .html / .pdf
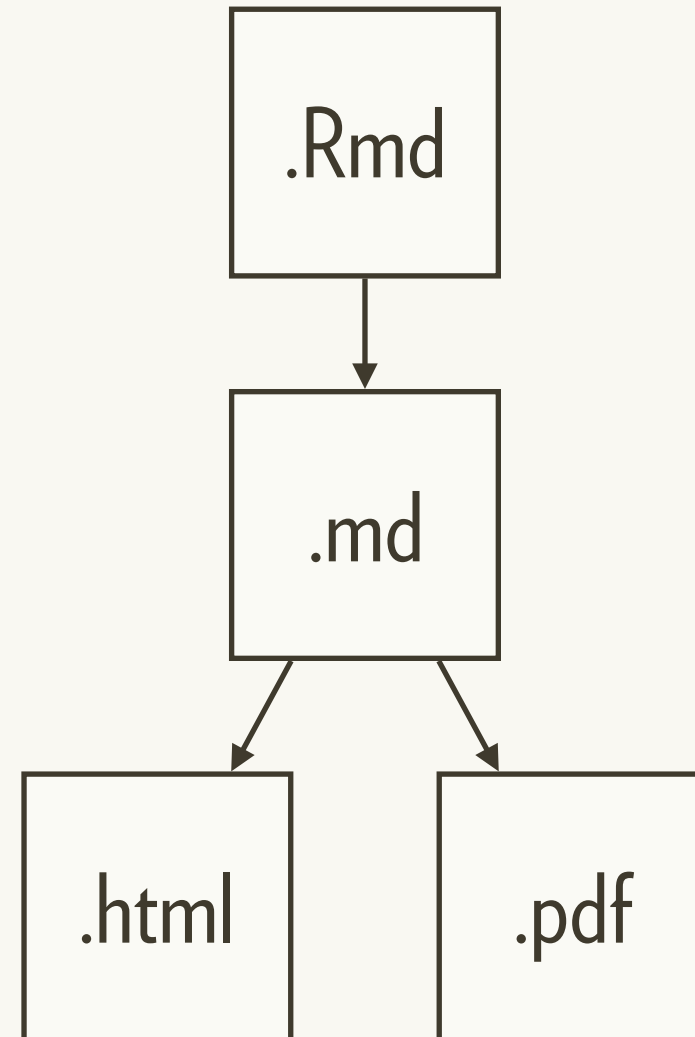
Markdown

I assume you are already familiar with it

Basic markdown formatting

```
# This is a top level heading

This is some text. Make text _italic_ with single  underscores (or
stars). Make it **bold** with double stars (or underscores). Here is a
[link to a markdown guide](http://bit.ly/19fAexE).


* This is a list

* This is another item

```R
# Some R code
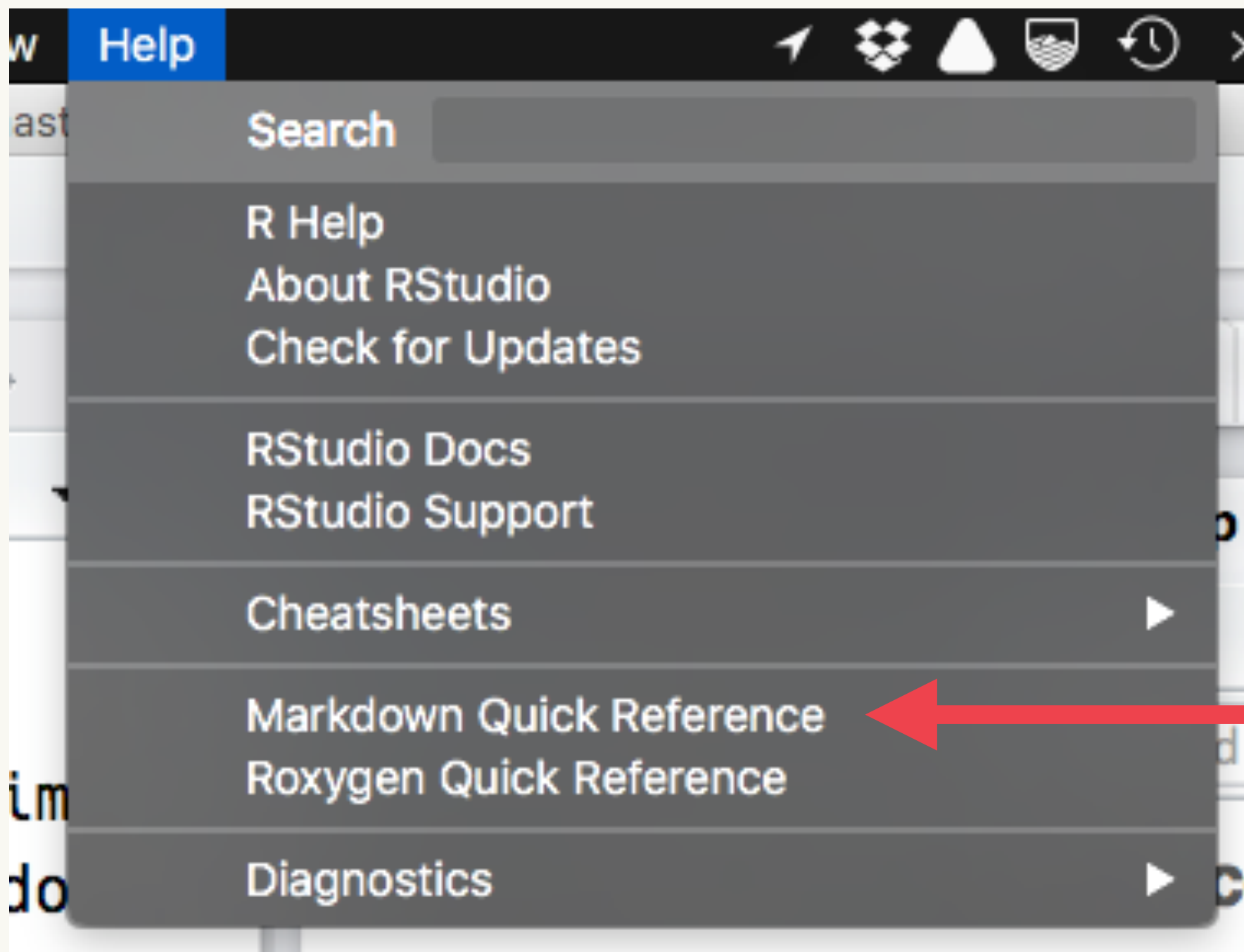f <- function() x + 1
```

This is a secondary heading

You can also do `inline code`, numbered lists and quotes and more.
```

Search

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Markdown Quick Reference ⟵
Roxygen Quick Reference

Diagnostics ▶

Function documentation with roxygen2

Roxygen2

R comments →**roxygen2**→ Rd files →**R**→ HTML

You write specially formatted comments in .R

```
#' Add a column to a data frame
#'
#' Allows you to specify the position. Will replace existing variable
#' with the same name if present.
#'
#' @param x A data frame
#' @param name Name of variable to create. If a variable of that name
#'    already exists it will be replaced
#' @param value Values to insert.
#' @param where Position to insert. Use 1 to insert on LHS, or -1 to insert on
#'    RHS.
#' @examples
#' df <- data.frame(x = 1:5)
#' add_col(df, "y", runif(5))
#' add_col(df, "y", runif(5), where = 1)
#'
#' add_col(df, "x", 5:1)
```

You write specially formatted comments in .R

```
#'                          frame
#'
#' Allows you to specify the position. Will replace existing variable
#' with the same name if present.
#'
#' @param
#' @param na              ble to create. If a variable of that name
#'   already exists it will be replaced
#' @param value Values to insert.
#' @param where Position to insert. Use 1 to insert on LHS, or -1 to insert on
#'   RHS.
#' @examples
#' df <- data.frame(x = 1:5)
#' add_col(df, "y", runif(5))
#' add_col(df, "y", runif(5), where = 1)
#'
#' add_col(df, "x", 5:1)
```

Roxygen comment

Roxygen tag

Roxygen translates to .Rd

```
% Generated by roxygen2: do not edit by hand
% Please edit documentation in R/add_col.R
\name{add_col}
\alias{add_col}
\title{Add a column to a data frame}
\usage{
add_col(x, name, value, where = -1)
}
\arguments{
\item{x}{A data frame}
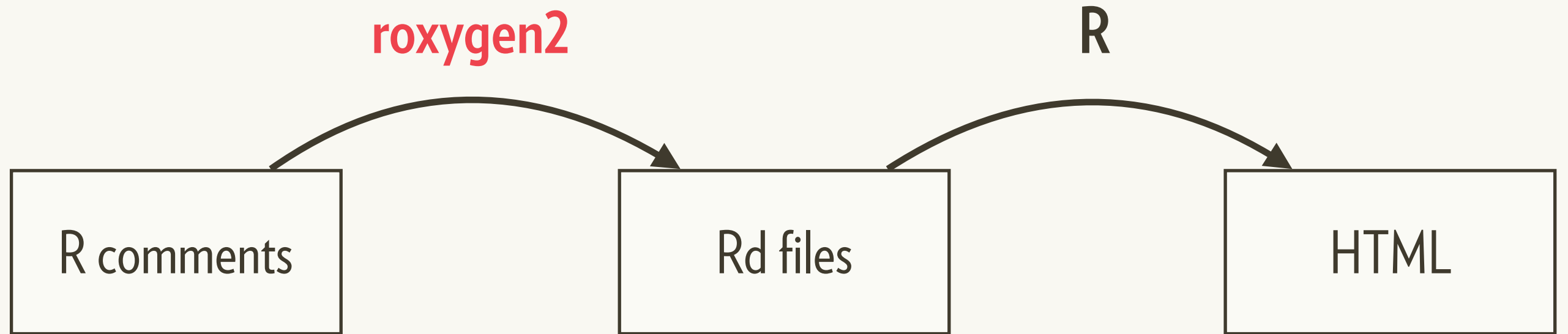
\item{name}{Name of variable to create. If a variable of that name
already exists it will be replaced}

\item{value}{Values to insert.}

\item{where}{Position to insert. Use 1 to insert on LHS, or -1 to insert on
RHS.}
}
\description{
Allows you to specify the position. Will replace existing variable
with the same name if present.
}
```

add_col {hadcol}

Add a column to a data frame

Description

Allows you to specify the position. Will replace existing variable with the same name if present.

Usage

```
add_col(x, name, value, where = -1)
```
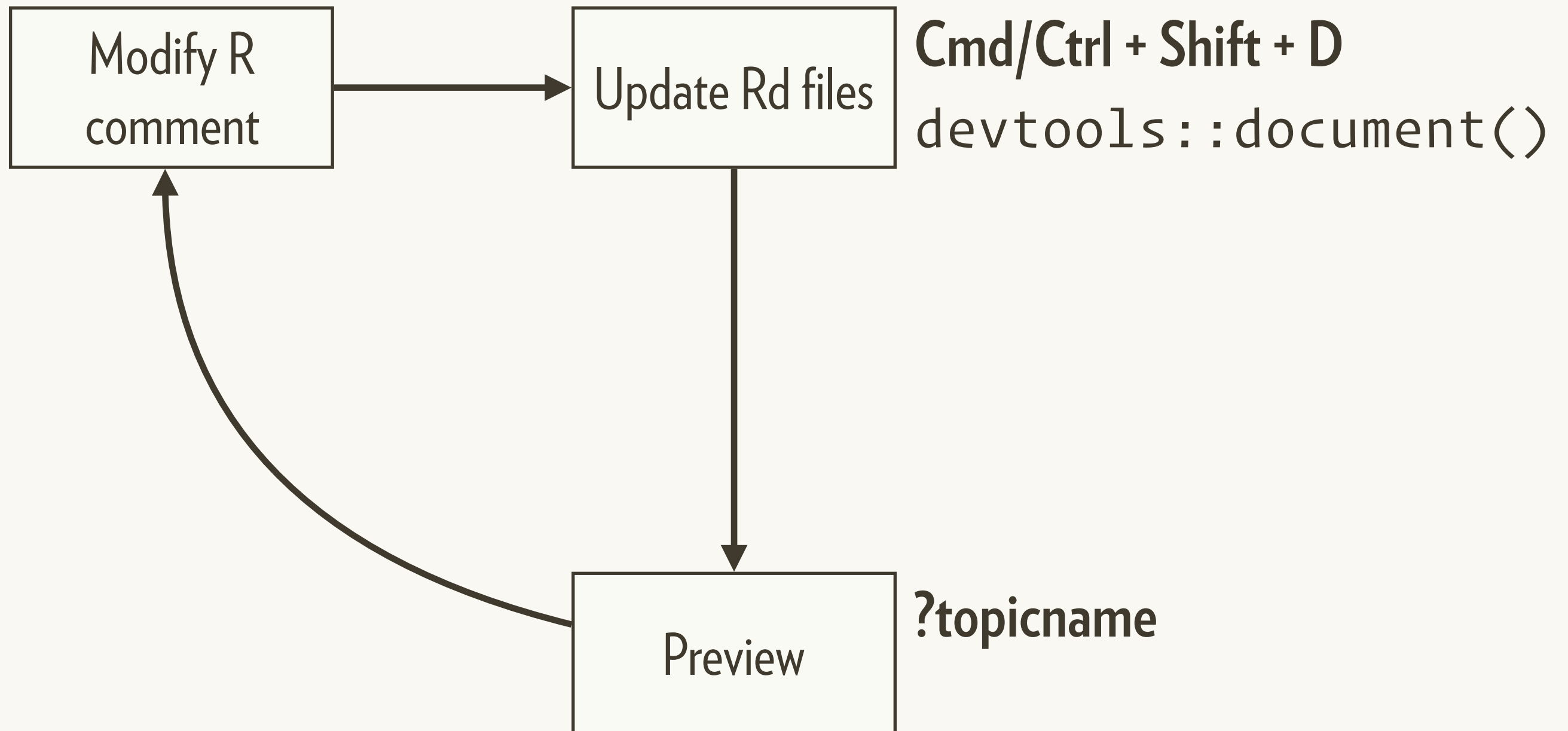
Arguments

x   A data frame

name   Name of variable to create. If a variable of that name already exists it will be replaced

value   Values to insert.

where   Position to insert. Use 1 to insert on LHS, or -1 to insert on RHS.

Examples

```
df <- data.frame(x = 1:5)
add_col(df, "y", runif(5))
add_col(df, "y", runif(5), where = 1)

add_col(df, "x", 5:1)
```
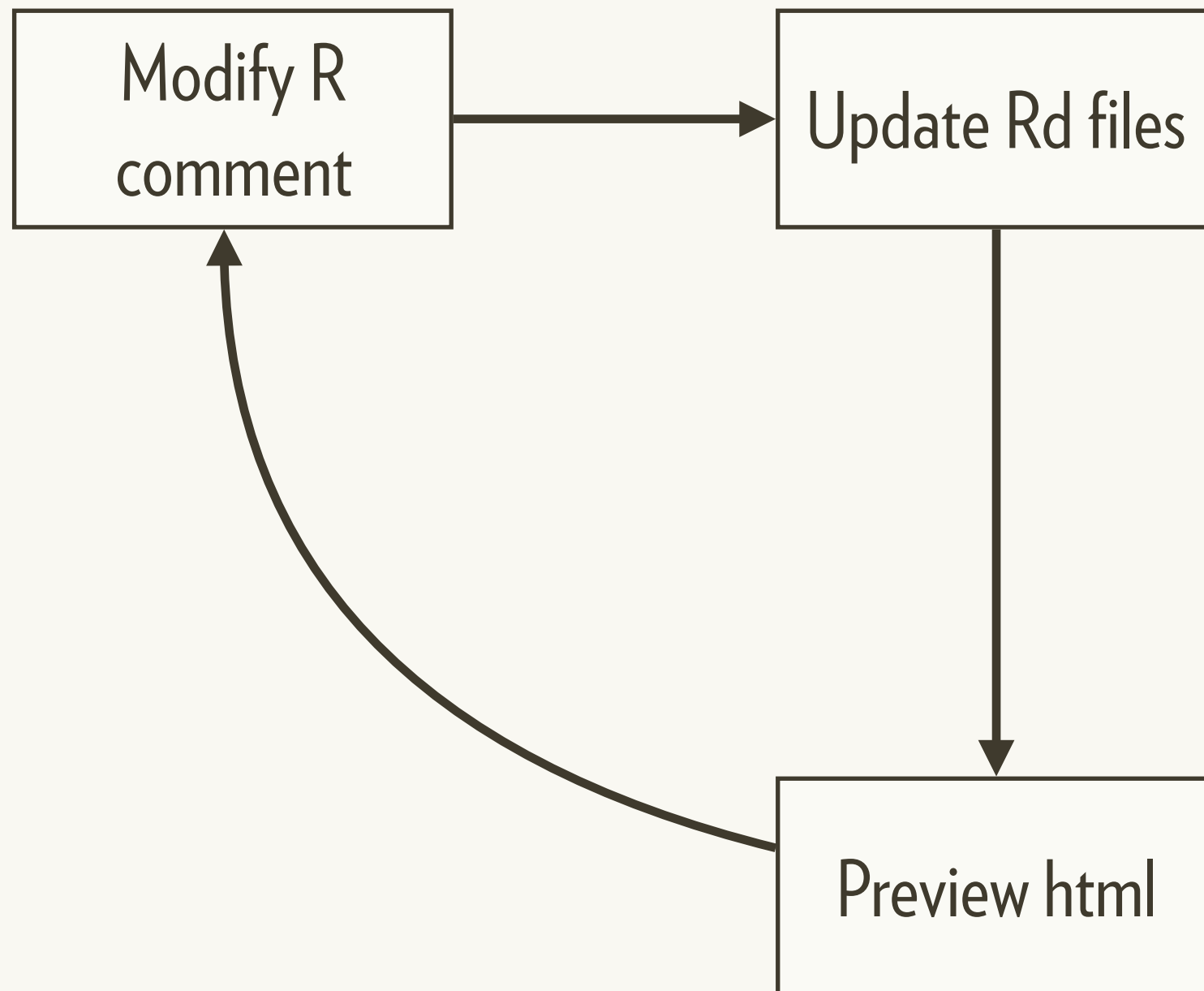
Documentation workflow

Modify R comment → Update Rd files

Cmd/Ctrl + Shift + D
`devtools::document()`

Update Rd files → Preview

?topicname

Preview → Modify R comment

Two caveats

1. You must have loaded the package with load_all() at least once.
   Check for message "Using development documentation..."

2. This technique only builds individual files so links do not work.

Documentation workflow

```
Modify R
comment
```

→

```
Update Rd files
```

Cmd/Ctrl + Shift + D
`devtools::document()`

NB: You must have loaded the package
with load_all() at least once

```
Preview html
```

?topicname

Only shows single file,
so links do not work

Change working directory/project to:

[hadcol]

Your turn

Fix the typos in the documentation for add_col.
Run the documentation workflow to check your work

First sentence is the **title**

Sum of Vector Elements

Description

`sum` returns the sum of all the values present in its arguments.

Next paragraph is the **description**

Usage

```
sum(..., na.rm = FALSE)
```

Arguments

`...`   numeric or complex or logical vectors.

`na.rm`   logical. Should missing values (including `NaN`) be removed?

Details

Everything else is the **details**

T̶h̶e̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ectly or via the Summary group
g̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ ̶ld be unnamed, and dispatch is

If `na.rm` is `FALSE` an `NA` or `NaN` value in any of the arguments will cause a value of `NA` or

The description block

First sentence is the **title**

Next paragraph is the **description**

```
#' Sum of vector elements
#'
#' \code{sum} returns the sum of all the values present in its arguments.
#'
#' This is a generic function: methods can be defined for it directly or via the
#' \code{\link{Summary}} group generic. For this to work properly, the arguments
#' \code{...} should be unnamed, and dispatch is on the first argument.
```

Everything else is the **details**
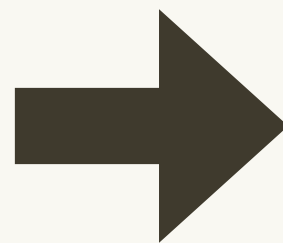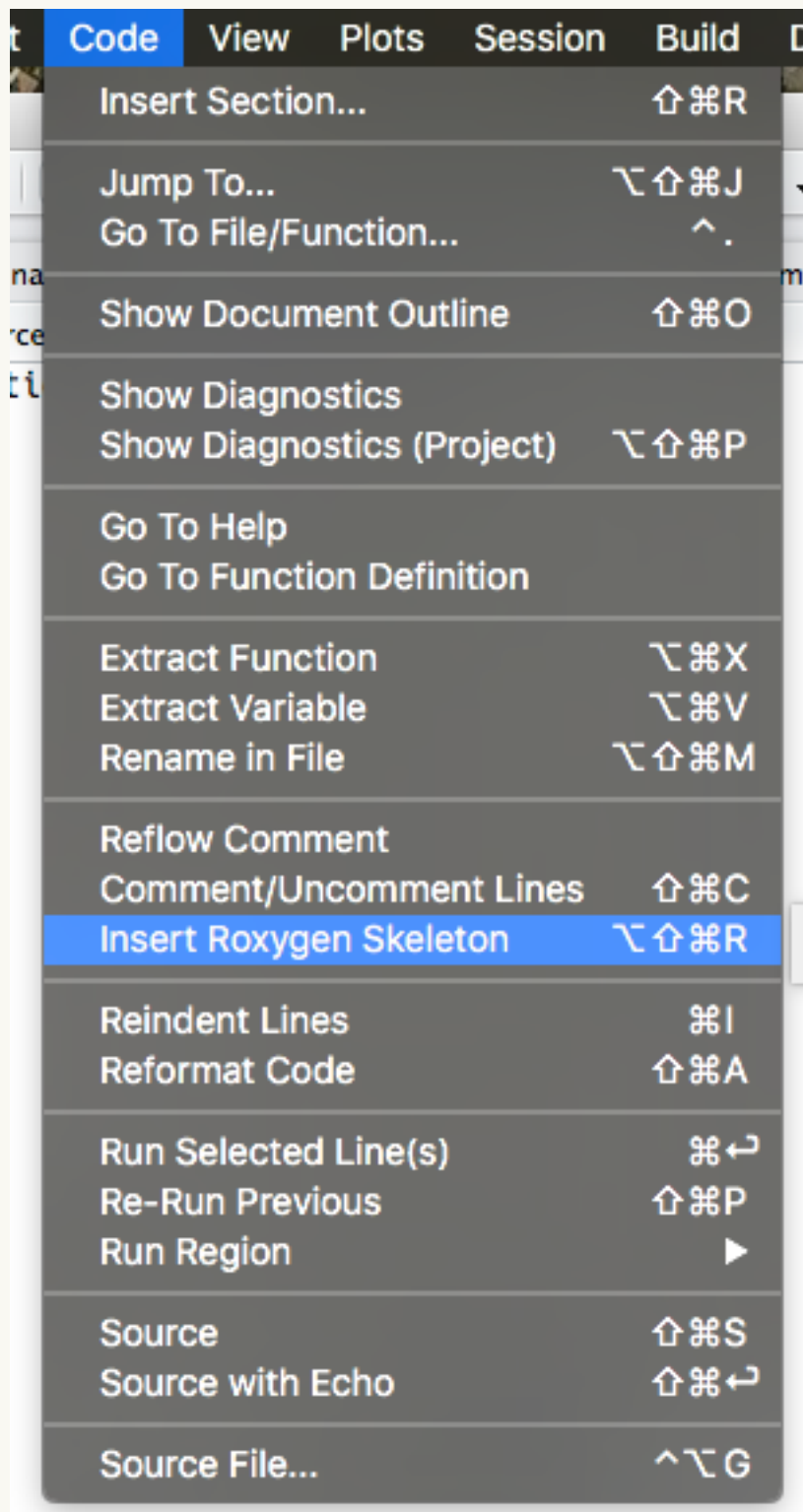
There are five tags you'll use for most functions

Tag	Purpose
@param arg	Describe inputs
@examples	Show how the function works. (Usual RStudio shortcuts work)
@seealso	Pointers to related functions
@return	Describe outputs (value)
@export	Is this a user-visible function?

Document `add_cols()`.

(See next slide for hint)

RStudio helps you remember


```
#' Title
#'
#' @param x
#' @param y
#' @param z
#'
#' @return
#' @export
#'
#' @examples
fun <- function(x, y, z) {

}
```

Use markdown for formatting

```
# Activate by running
# use_roxygen_md()

**bold**, _italic_, `code`

* [func()]
* [pkg::func()]
* [link text][func()]
* [link text][pkg::func()]
```
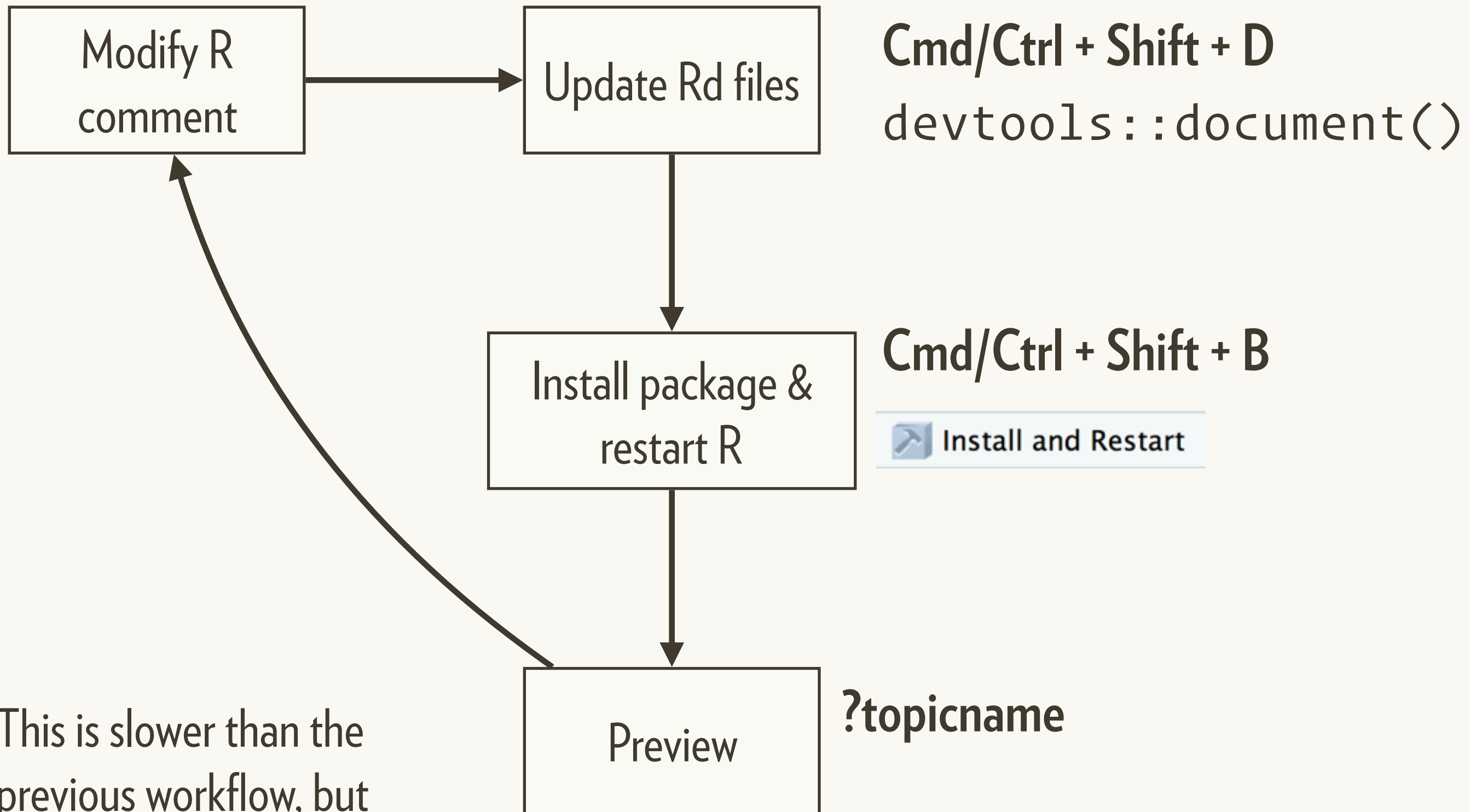
Documentation workflow 2

Modify R comment → Update Rd files

Cmd/Ctrl + Shift + D
`devtools::document()`

Install package & restart R

Cmd/Ctrl + Shift + B

Install and Restart

Preview

?topicname

This is slower than the previous workflow, but there are fewer caveats

Make real link to cbind()

Add a see also section (@seealso) to add_col() and add_cols() that links them together.

What happens if you add @family xyz to both?

roxygen2 comes with other tools to reduce duplication

```r
# Document multiple functions in the same file
#' @rdname add_col

# Inherit the parameter descriptions from
# another function
#' @inheritParams add_col

# Inherit everything from another topic
#' @inherit add_col

# Inherit selectively
#' @inherit add_col parameters return references
#'    title description details
#'    sections seealso
```

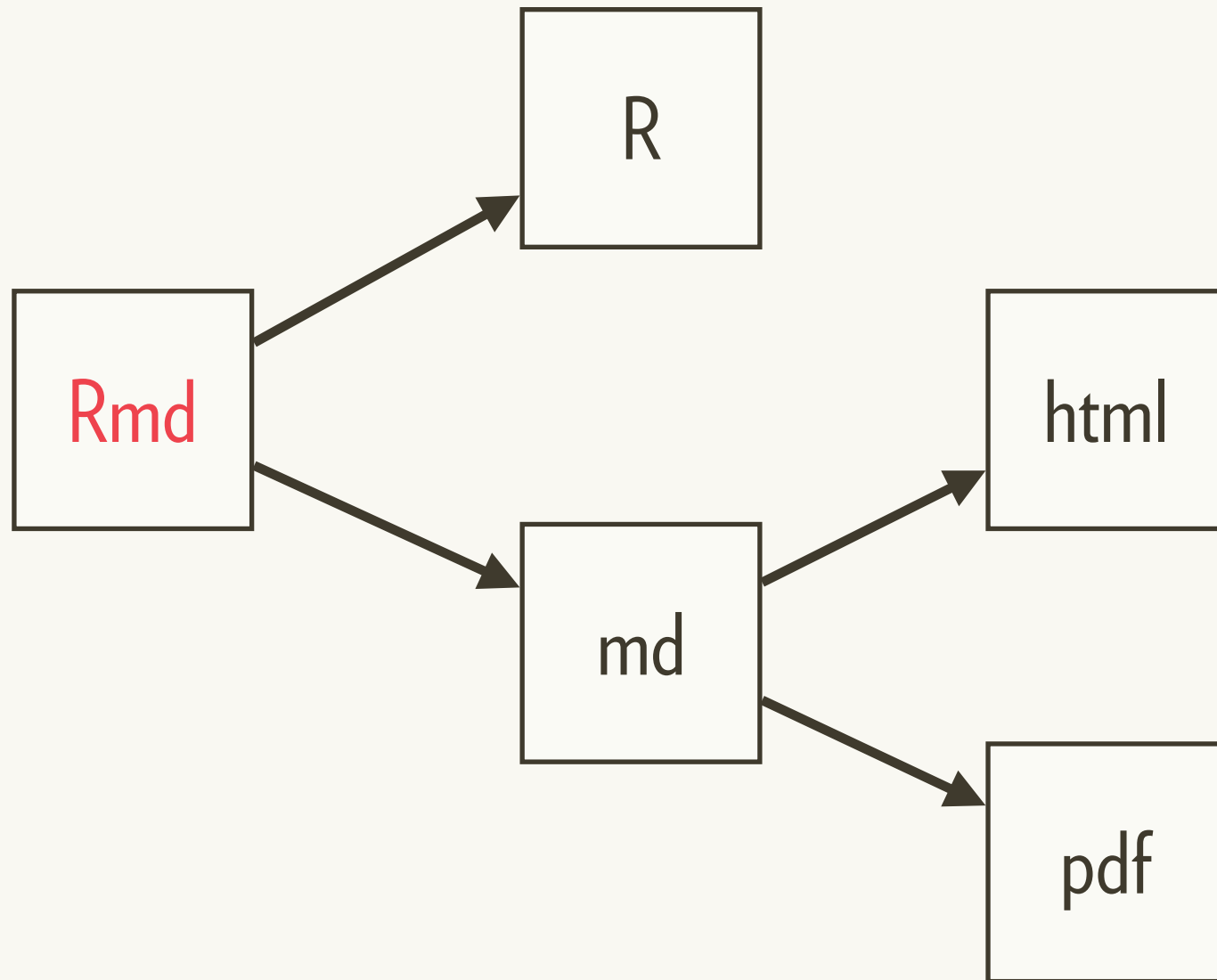# Read online about how to document other objects

Data

http://r-pkgs.had.co.nz/data.html#documenting-data

Classes & methods

http://r-pkgs.had.co.nz/man.html#man-classes

Packages

http://r-pkgs.had.co.nz/man.html#man-packages

Package documentation with rmarkdown

Vignettes

R

Rmd

md

html

pdf

rmarkdown

knitr

pandoc

Lets you combine prose and code to explain your how you package works.

The hard part is the writing, not the technology!

http://r-pkgs.had.co.nz/vignettes.html
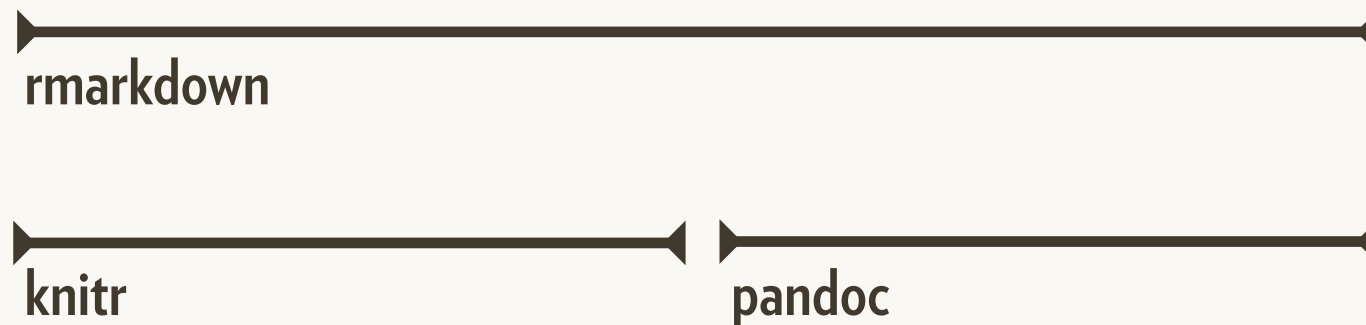
Easiest way to get started is with use_vignette()

```r
usethis::use_vignette("name")

# Adds to DESCRIPTION
Suggests: knitr
VignetteBuilder: knitr

# Creates vignettes/
# Drafts vignettes/name.Rmd
```

Vignette = Rmarkdown + special metadata

```
---
title: "Vignette Title"
author: "Vignette author"
date: "`r Sys.Date()`"
output: rmarkdown::html_vignette
vignette: >
  %\VignetteIndexEntry{Vignette Title}
  %\VignetteEngine{knitr::rmarkdown}
  %\VignetteEncoding{UTF-8}
---
```
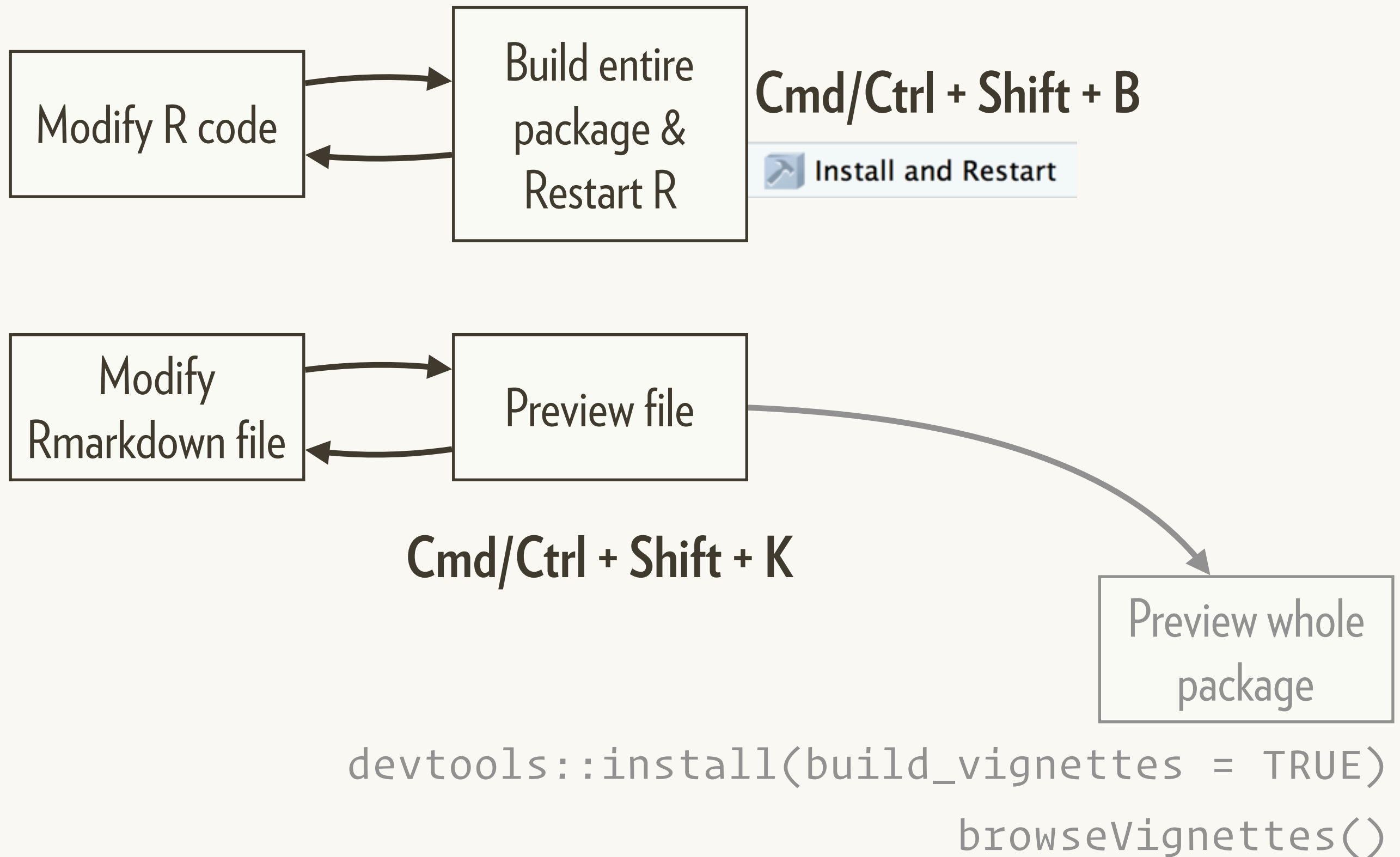
Special output format for vignettes

Special metadata needed by R

```
Vignettes are long form documentation commonly included in packages.
Because they are part of the distribution of the package, they need to
be as compact as possible. The `html_vignette` output type provides a
custom style sheet (and tweaks some options) to ensure that the
resulting html is as small as possible. The `html_vignette` format:


...
```

Vignette workflow

Modify R code → Build entire package & Restart R

Cmd/Ctrl + Shift + B

Install and Restart

Modify Rmarkdown file → Preview file → Preview whole package

Cmd/Ctrl + Shift + K

```
devtools::install(build_vignettes = TRUE)

browseVignettes()
```

Your turn

Create a vignette that shows how to use add_col() for adding and removing.

Fix the "vignette title"

README

If sharing with others, include a readme

```r
# Your choice: but often useful to include
# results of running code
usethis::use_readme_md()
usethis::use_readme_rmd()

# For public projects this should include a
# brief overview, instructions on how to
# install, and a few examples. For private
# projects, this is a great place to jot down
# notes
```

NEWS

Also good idea to track changes

```
usethis::use_news_md()
```