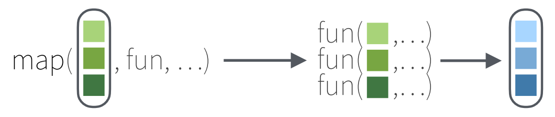
Apply functions with purrr : : **CHEATSHEET**

Map Functions

ONE LIST

map(.x, .f, …**)** Apply a function to each element of a list or vector, and return a list.

```
x <- list(a = 1:10, b = 11:20, c = 21:30)
l1 <- list(x = c("a", "b"), y = c("c", "d"))
map(l1, sort, decreasing = TRUE)
```



map_dbl(.x, .f, …**)** Return a double vector.
map_dbl(x, mean)

map_int(.x, .f, ...**)** Return an integer vector.
map_int(x, length)

map_chr(.x, .f, …**)** Return a character vector.
map_chr(l1, paste, collapse = "")

map_lgl(.x, .f, …**)** Return a logical vector.
map_lgl(x, is.integer)

map_dfc(.x, .f, ...**)** Return a data frame created by column-binding.
map_dfc(l1, rep, 3)

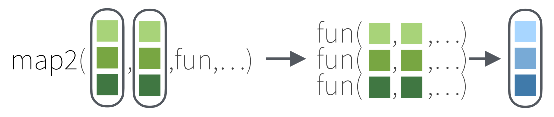
map_dfr(.x, .f, ..., .id = NULL**)** Return a data frame created by row-binding.
map_dfr(x, summary)

walk(.x, .f, ...**)** Trigger side effects, return invisibly.
walk(x, print)

TWO LISTS

map2(.x, .y, .f, …**)** Apply a function to pairs of elements from two lists or vectors, return a list.

```
y <- list(1, 2, 3); z <- list(4, 5, 6); l2 <- list(x = "a", y = "z")
map2(x, y, ~ .x * .y)
```



map2_dbl(.x, .y, .f, …**)** Return a double vector.
map2_dbl(y, z, ~ .x / .y)

map2_int(.x, .y, .f, …**)** Return an integer vector.
map2_int(y, z, `+`)

map2_chr(.x, .y, .f, …**)** Return a character vector.
map2_chr(l1, l2, paste, collapse = ",", sep = ":")

map2_lgl(.x, .y, .f, …**)** Return a logical vector.
map2_lgl(l2, l1, `%in%`)

map2_dfc(.x, .y, .f, ...**)** Return a data frame created by column-binding.
map2_dfc(l1, l2,
~ as.data.frame(c(.x, .y)))

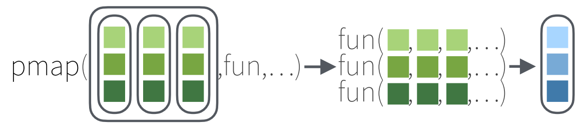
map2_dfr(.x, .y, .f, ..., .id = NULL**)** Return a data frame created by row-binding.
map2_dfr(l1, l2,
~ as.data.frame(c(.x, .y)))

walk2(.x, .y, .f, ...**)** Trigger side effects, return invisibly.
walk2(objs, paths, save)

MANY LISTS

pmap(.l, .f, …**)** Apply a function to groups of elements from a list of lists or vectors, return a list.

```
pmap(list(x, y, z), ~ ..1 * (..2 + ..3))
```



pmap_dbl(.l, .f, …**)** Return a double vector.
pmap_dbl(list(y, z), ~ .x / .y)

pmap_int(.l, .f, …**)** Return an integer vector.
pmap_int(list(y, z), `+`)

pmap_chr(.l, .f, …**)** Return a character vector.
pmap_chr(list(l1, l2), paste, collapse = ",", sep = ":")

pmap_lgl(.l, .f, …**)** Return a logical vector.
pmap_lgl(list(l2, l1), `%in%`)

pmap_dfc(.l, .f, ...**)** Return a data frame created by column-binding.
pmap_dfc(list(l1, l2),
~ as.data.frame(c(.x, .y)))

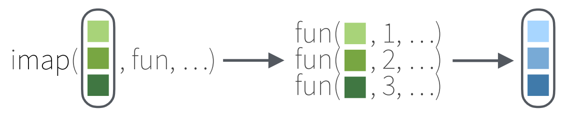
pmap_dfr(.l, .f, ..., .id = NULL**)** Return a data frame created by row-binding.
pmap_dfr(list(l1, l2),
~ as.data.frame(c(.x, .y)))

pwalk(.l, .f, ...**)** Trigger side effects, return invisibly.
pwalk(list(objs, paths), save)

LISTS AND INDEXES

imap(.x, .f, ...**)** Apply .f to each element and its index, return a list.

```
imap(y, ~ paste0(.y, ": ", .x))
```



imap_dbl(.x, .f, …**)** Return a double vector.
imap_dbl(y, ~ .y)

imap_int(.x, .f, ...**)** Return an integer vector.
imap_int(y, ~ .y)

imap_chr(.x, .f, …**)** Return a character vector.
imap_chr(y, ~ paste0(.y, ": ", .x))

imap_lgl(.x, .f, …**)** Return a logical vector.
imap_lgl(l1, ~ is.character(.y))

imap_dfc(.x, .f, ...**)** Return a data frame created by column-binding.
imap_dfc(l2,
~ as.data.frame(c(.x, .y)))

imap_dfr(.x, .f, ..., .id = NULL**)** Return a data frame created by row-binding.
imap_dfr(l2,
~ as.data.frame(c(.x, .y)))

iwalk(.x, .f, ...**)** Trigger side effects, return invisibly.
iwalk(z, ~ print(paste0(.y, ": ", .x)))

Function Shortcuts

Use **~ .** with functions like **map()** that have single arguments.

map(l, ~ . + 2)
becomes
map(l, function(x) x + 2))

Use **~ .x .y** with functions like **map2()** that have two arguments.

map2(l, p, ~ .x +.y)
becomes
map2(l, p, function(l, p) l + p)

Use **~ ..1 ..2 ..3** etc with functions like **pmap()** that have many arguments.

pmap(list(a, b, c), ~ ..3 + ..1 - ..2)
becomes
pmap(list(a, b, c), function(a, b, c) c + a -b)

Use **~ .x .y** with functions like **imap()**. .x will get the list value and .y will get the index, or name if available.

imap(list(a, b, c), ~ paste0(.y, ": ", .x)
outputs **"index: value"** for each item

Use a **string** or an **integer** with any map function to index list elements by name or position. **map(l, "name")** becomes **map(l, function(x) x[["name"]])**

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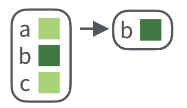
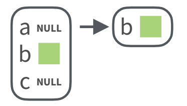
Work with Lists

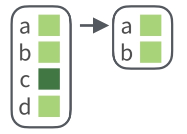
Filter



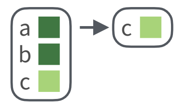
keep(.x, .p, …)
Select elements that pass a logical test.
Conversely, **discard()**.
keep(x, is.numeric)



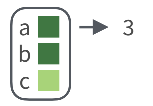
compact(.x, .p = identity)
Drop empty elements.
compact(x)



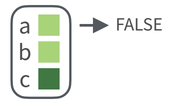
head_while(.x, .p, …)
Return head elements until one does not pass.
Also **tail_while()**.
head_while(x, is.character)



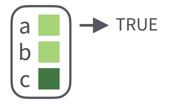
detect(.x, .f, ..., dir = c("forward", "backward"), .right = NULL, .default = NULL)
Find first element to pass.
detect(x, is.character)



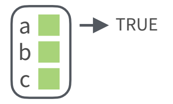
detect_index(.x, .f, ..., dir = c("forward", "backward"), .right = NULL) Find index of first element to pass.
detect_index(x, is.character)



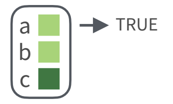
every(.x, .p, …)
Do all elements pass a test?
every(x, is.character)



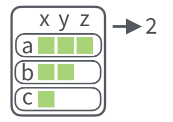
some(.x, .p, …)
Do some elements pass a test?
some(x, is.character)



none(.x, .p, …)
Do no elements pass a test?
none(x, is.character)

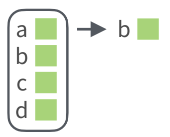


has_element(.x, .y)
Does a list contain an element?
has_element(x, "foo")

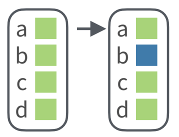


pluck_depth(x)
Return depth (number of levels of indexes).
pluck_depth(x)

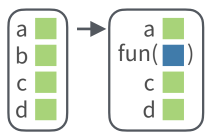
Index



pluck(.x, ..., .default=NULL)
Select an element by name or index. Also **attr_getter()** and **chuck()**.
pluck(x, "b")
x |> pluck("b")

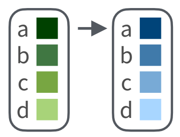


assign_in(x, where, value)
Assign a value to a location using pluck selection.
assign_in(x, "b", 5)
x |> assign_in("b", 5)

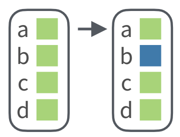


modify_in(.x, .where, .f)
Apply a function to a value at a selected location.
modify_in(x, "b", abs)
x |> modify_in("b", abs)

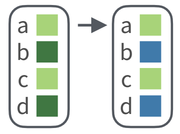
Modify



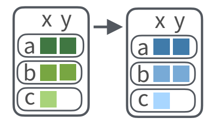
modify(.x, .f, ...) Apply a function to each element. Also **modify2()**, and **imodify()**.
modify(x, ~.+ 2)



modify_at(.x, .at, .f, ...) Apply a function to selected elements. Also **map_at()**.
modify_at(x, "b", ~.+ 2)

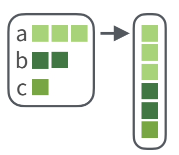


modify_if(.x, .p, .f, ...) Apply a function to elements that pass a test. Also **map_if()**.
modify_if(x, is.numeric,~.+2)

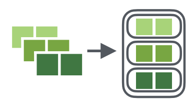


modify_depth(.x, .depth, .f, ...) Apply function to each element at a given level of a list. Also **map_depth()**.
modify_depth(x, 1, ~.+ 2)

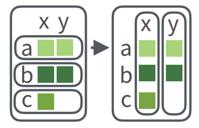
Reshape



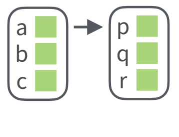
flatten(.x) Remove a level of indexes from a list.
Also **flatten_chr()** etc.
flatten(x)



array_tree(array, margin = NULL) Turn array into list.
Also **array_branch()**.
z <- array(1:12, c(2,2,2))
array_tree(x, margin = 3)



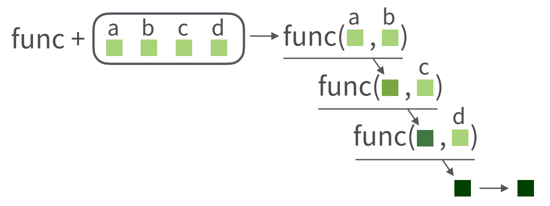
transpose(.l, .names = NULL)
Transposes the index order in a multi-level list.
transpose(x)



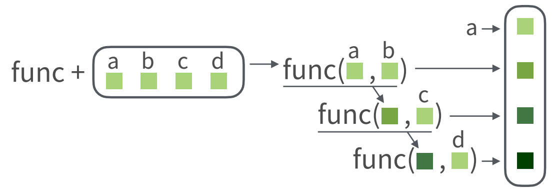
set_names(x, nm = x)
Set the names of a vector/list directly or with a function.
set_names(x, c("p", "q", "r"))
set_names(x, tolower)

Reduce

reduce(.x, .f, ..., .init, .dir = c("forward", "backward")) Apply function recursively to each element of a list or vector. Also **reduce2()**.
reduce(x, sum)



accumulate(.f, .f, ..., .init) Reduce a list, but also return intermediate results. Also **accumulate2()**.
accumulate(x, sum)



List-Columns

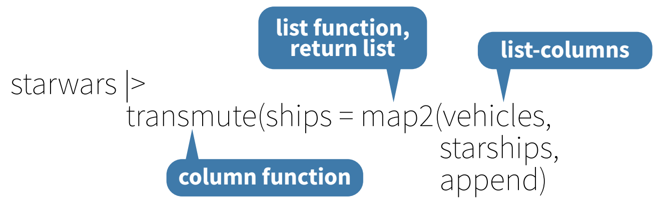
max	seq
3	<int [3]>
4	<int [4]>
5	<int [5]>

List-columns are columns of a data frame where each element is a list or vector instead of an atomic value. Columns can also be lists of data frames. See **tidyr** for more about nested data and list columns.

WORK WITH LIST-COLUMNS

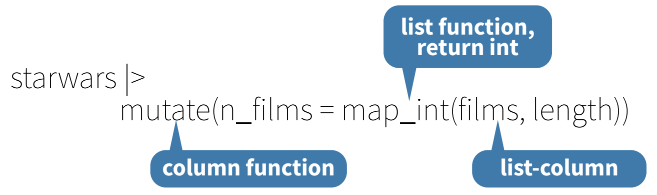
Manipulate list-columns like any other kind of column, using **dplyr** functions like **mutate()** and **transmute()**. Because each element is a list, use **map functions** within a column function to manipulate each element.

map(), **map2()**, or **pmap()** return lists and will **create new list-columns**.



```
starwars |>
  transmute(ships = map2(vehicles,
                         starships,
                         append)
```

Suffixed map functions like **map_int()** return an atomic data type and will **simplify list-columns into regular columns**.



```
starwars |>
  mutate(n_films = map_int(films, length))
```