

Package ‘maybe’

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Title The Maybe Monad

Version 1.1.0

Description The maybe type represents the possibility of some value or nothing. It is often used instead of throwing an error or returning `NULL`. The advantage of using a maybe type over `NULL` is that it is both composable and requires the developer to explicitly acknowledge the potential absence of a value, helping to avoid the existence of unexpected behaviour.

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URL <https://github.com/armcn/maybe>, <https://armcn.github.io/maybe/>

BugReports <https://github.com/armcn/maybe/issues>

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and	<i>Combine predicate functions to check if all are TRUE</i>
-----	---

Description

Combine predicate functions to check if all are TRUE

Usage

```
and(...)
```

Arguments

```
...          Predicate functions
```

Value

A predicate function

Examples

```
and(not_null, not_na)(1)
and(not_null, not_na)(NULL)
```

and_then	<i>Evaluate a maybe returning function on a maybe value</i>
----------	---

Description

Evaluate a maybe returning function on a maybe value

Usage

```
and_then(.m, .f, ...)
```

```
bind(.m, .f, ...)
```

Arguments

.m	A maybe value
.f	A maybe returning function to apply to the maybe value
...	Named arguments for the function .f

Value

A maybe value

Examples

```
safe_sqrt <- maybe(sqrt, ensure = not_infinite)

just(9) %>% and_then(safe_sqrt)
just(-1) %>% and_then(safe_sqrt)
nothing() %>% and_then(safe_sqrt)
```

and_then2	<i>Evaluate a binary maybe returning function on two maybe values</i>
-----------	---

Description

Evaluate a binary maybe returning function on two maybe values

Usage

```
and_then2(.m1, .m2, .f, ...)
```

Arguments

.m1	A maybe value
.m2	A maybe value
.f	A binary maybe returning function to apply to the maybe values
...	Named arguments for the function .f

Value

A maybe value

Examples

```
and_then2(just(1), just(2), maybe(`+`))
and_then2(nothing(), just(2), maybe(`/`))
```

and_then3	<i>Evaluate a ternary maybe returning function on three maybe values</i>
-----------	--

Description

Evaluate a ternary maybe returning function on three maybe values

Usage

```
and_then3(.m1, .m2, .m3, .f, ...)
```

Arguments

.m1	A maybe value
.m2	A maybe value
.m3	A maybe value
.f	A ternary maybe returning function to apply to the maybe values
...	Named arguments for the function .f

Value

A maybe value

Examples

```
safe_sum <- maybe(function(x, y, z) sum(x, y, z))

and_then3(just(1), just(2), just(3), safe_sum)
and_then3(nothing(), just(2), just(3), safe_sum)
```

filter_justs	<i>Filter and unwrap a list of 'Just' values</i>
--------------	--

Description

Filter and unwrap a list of 'Just' values

Usage

```
filter_justs(.l)
```

Arguments

.l List of maybe values

Value

A list of values

Examples

```
filter_justs(list(just(1), nothing(), just("a")))
```

filter_map	<i>Map a function over a list and filter only 'Just' values</i>
------------	---

Description

Map a function over a list and filter only 'Just' values

Usage

```
filter_map(.l, .f, ...)
```

Arguments

.l List of values
.f A maybe returning function to apply to the maybe values
... Named arguments for the function .f

Value

A list of values

Examples

```
filter_map(list(-1, "2", 9), maybe(sqrt))
```

`from_just`*Unwrap a 'Just' value or throw an error*

Description

Unwrap a 'Just' value or throw an error

Usage

```
from_just(.m)
```

Arguments

`.m` A maybe value

Value

The unwrapped 'Just' value

Examples

```
just(1) %>% from_just()
```

`is_just`*Check if an object is a 'Just' value*

Description

Check if an object is a 'Just' value

Usage

```
is_just(a)
```

Arguments

`a` Object to check

Value

TRUE or FALSE

Examples

```
is_just(1)
is_just(just(1))
is_just(nothing())
```

is_maybe	<i>Check if an object is a maybe value</i>
----------	--

Description

Check if an object is a maybe value

Usage

```
is_maybe(a)
```

Arguments

a	Object to check
---	-----------------

Value

TRUE or FALSE

Examples

```
is_maybe(1)
is_maybe(just(1))
is_maybe(nothing())
```

is_nothing	<i>Check if an object is a 'Nothing' value</i>
------------	--

Description

Check if an object is a 'Nothing' value

Usage

```
is_nothing(a)
```

Arguments

a	Object to check
---	-----------------

Value

TRUE or FALSE

Examples

```
is_nothing(1)
is_nothing(just(1))
is_nothing(nothing())
```

just	<i>Create a 'Just' variant of a maybe value</i>
------	---

Description

Create a 'Just' variant of a maybe value

Usage

```
just(a)
```

Arguments

a	A value to wrap in a 'Just' container
---	---------------------------------------

Value

A 'Just' variant of a maybe value

Examples

```
just(1)
just("hello")
```

maybe	<i>Modify a function to return a maybe value</i>
-------	--

Description

Wrapping a function in maybe will modify it to return a maybe value. If the function would normally return an error or warning the modified function will return a 'Nothing' value, otherwise it will return a 'Just' value. If a predicate function is provided with the parameter ensure, if the predicate returns TRUE when evaluated on the return value of the function, then a 'Just' value will be returned by the modified function, otherwise it will return a 'Nothing' value.

Usage

```
maybe(.f, ensure = function(a) TRUE, allow_warning = FALSE)
```

Arguments

.f	A function to modify
ensure	A predicate function
allow_warning	Whether warnings should result in 'Nothing' values

Value

A function which returns maybe values

Examples

```
maybe(mean)(1:10)
maybe(mean, allow_warning = TRUE)("hello")
maybe(sqrt)("hello")
maybe(sqrt, ensure = not_infinite)(-1)
```

maybe_case

Unwrap and call a function on a maybe value or return a default

Description

Unwrap and call a function on a maybe value or return a default

Usage

```
maybe_case(.m, .f, default)
```

Arguments

.m	A maybe value
.f	A function to apply to the maybe value in the case of 'Just'
default	A default value to return in the case of 'Nothing'

Value

The return value of the 'Just' function or the default value

Examples

```
just(1:10) %>% maybe_case(mean, 0)
nothing() %>% maybe_case(mean, 0)
```

maybe_contains	<i>Check if a maybe value contains a specific value</i>
----------------	---

Description

If the maybe value is a 'Nothing' variant FALSE will be returned. If it is a 'Just' variant the contents will be unwrapped and compared to the value argument using `base::identical`.

Usage

```
maybe_contains(.m, value)
```

Arguments

.m	A maybe value
value	A value to check

Value

TRUE or FALSE

Examples

```
just(1) %>% maybe_contains(1)
just("a") %>% maybe_contains(1)
nothing() %>% maybe_contains(1)
```

maybe_equal	<i>Check if two maybe values are equal</i>
-------------	--

Description

If both values are 'Nothing' variants or both values are 'Just' variants with identical contents TRUE will be returned, otherwise FALSE.

Usage

```
maybe_equal(.m1, .m2)
```

Arguments

.m1	A maybe value
.m2	A maybe value

Value

TRUE or FALSE

Examples

```
maybe_equal(just(1), just(1))
maybe_equal(just(1), just(2))
maybe_equal(nothing(), nothing())
```

maybe_flatten	<i>Flatten a nested maybe value</i>
---------------	-------------------------------------

Description

Flatten a nested maybe value

Usage

```
maybe_flatten(.m)
```

```
join(.m)
```

Arguments

`.m` A maybe value

Value

A maybe value

Examples

```
just(just(1)) %>% maybe_flatten()
just(nothing()) %>% maybe_flatten()
just(1) %>% maybe_flatten()
nothing() %>% maybe_flatten()
```

maybe_map	<i>Evaluate a function on a maybe value</i>
-----------	---

Description

Evaluate a function on a maybe value

Usage

```
maybe_map(.m, .f, ...)
```

```
fmap(.m, .f, ...)
```

Arguments

.m	A maybe value
.f	A function to apply to the maybe value
...	Named arguments for the function .f

Value

A maybe value

Examples

```
just(9) %>% maybe_map(sqrt)
nothing() %>% maybe_map(sqrt)
```

maybe_map2	<i>Evaluate a binary function on two maybe values</i>
------------	---

Description

Evaluate a binary function on two maybe values

Usage

```
maybe_map2(.m1, .m2, .f, ...)
```

Arguments

.m1	A maybe value
.m2	A maybe value
.f	A binary function to apply to the maybe values
...	Named arguments for the function .f

Value

A maybe value

Examples

```
maybe_map2(just(1), just(2), `+`)
maybe_map2(nothing(), just(2), `/`)
```

maybe_map3

Evaluate a ternary function on three maybe values

Description

Evaluate a ternary function on three maybe values

Usage

```
maybe_map3(.m1, .m2, .m3, .f, ...)
```

Arguments

.m1	A maybe value
.m2	A maybe value
.m3	A maybe value
.f	A ternary function to apply to the maybe values
...	Named arguments for the function .f

Value

A maybe value

Examples

```
maybe_map3(just(1), just(2), just(3), function(x, y, z) x + y + z)
maybe_map3(nothing(), just(2), just(3), function(x, y, z) x / y * z)
```

nothing	<i>Create a 'Nothing' variant of a maybe value</i>
---------	--

Description

Create a 'Nothing' variant of a maybe value

Usage

```
nothing()
```

Value

A 'Nothing' variant of a maybe value

Examples

```
nothing()
```

not_empty	<i>Check if a vector or data frame is empty</i>
-----------	---

Description

Check if a vector or data frame is empty

Usage

```
not_empty(a)
```

Arguments

a Object to check

Value

TRUE or FALSE

Examples

```
not_empty(integer())  
not_empty(list())  
not_empty(1:10)  
not_empty(data.frame())  
not_empty(data.frame(a = 1:10))
```

not_infinite	<i>Check if an object is not infinite</i>
--------------	---

Description

Check if an object is not infinite

Usage

```
not_infinite(a)
```

Arguments

a Object to check

Value

TRUE or FALSE

Examples

```
not_infinite(Inf)
not_infinite(1)
```

not_na	<i>Check if an object is not NA</i>
--------	-------------------------------------

Description

Check if an object is not NA

Usage

```
not_na(a)
```

Arguments

a Object to check

Value

TRUE or FALSE

Examples

```
not_na(NA)
not_na(1)
```

not_nan	<i>Check if an object is not NaN</i>
---------	--------------------------------------

Description

Check if an object is not NaN

Usage

```
not_nan(a)
```

Arguments

a	Object to check
---	-----------------

Value

TRUE or FALSE

Examples

```
not_nan(NaN)  
not_nan(1)
```

not_null	<i>Check if an object is not NULL</i>
----------	---------------------------------------

Description

Check if an object is not NULL

Usage

```
not_null(a)
```

Arguments

a	Object to check
---	-----------------

Value

TRUE or FALSE

Examples

```
not_null(NULL)  
not_null(1)
```

not_undefined	<i>Check if an object is not undefined</i>
---------------	--

Description

In this case 'undefined' values include NULL, NaN, all NA variants, and infinite values.

Usage

```
not_undefined(a)
```

Arguments

a	Object to check
---	-----------------

Value

TRUE or FALSE

Examples

```
not_undefined(NA)
not_undefined(NULL)
not_undefined(1)
```

or	<i>Combine predicate functions to check if any are TRUE</i>
----	---

Description

Combine predicate functions to check if any are TRUE

Usage

```
or(...)
```

Arguments

...	Predicate functions
-----	---------------------

Value

A predicate function

Examples

```
or(not_null, not_na)(1)
or(not_null, not_na)(NULL)
```

perhaps	<i>Modify a function to return the value or a default value</i>
---------	---

Description

Wrapping a function in `perhaps` will modify it to return the expected value or a default value in some circumstances. If the function would normally return an error or warning the modified function will return a default value, otherwise it will return the expected value. If a predicate function is provided with the parameter `ensure`, if the predicate returns `TRUE` when evaluated on the return value of the function, then the expected value will be returned by the modified function, otherwise it will return the default value.

Usage

```
perhaps(.f, default, ensure = function(a) TRUE, allow_warning = FALSE)
```

Arguments

<code>.f</code>	A function to modify
<code>default</code>	A default value
<code>ensure</code>	A predicate function
<code>allow_warning</code>	Whether warnings should result in the default value

Value

A function which returns the expected value or the default value

Examples

```
perhaps(mean, default = 0)(1:10)
perhaps(mean, default = 0, allow_warning = TRUE)("hello")
perhaps(sqrt, default = 0)("hello")
perhaps(sqrt, default = 0, ensure = not_infinite)(-1)
```

with_default	<i>Unwrap a maybe value or return a default</i>
--------------	---

Description

Unwrap a maybe value or return a default

Usage

```
with_default(.m, default)

from_maybe(.m, default)
```

Arguments

<code>.m</code>	A maybe value
<code>default</code>	A default value to return if the maybe value is 'Nothing'

Value

The unwrapped maybe value or the default value

Examples

```
just(1) %>% with_default(default = 0)
nothing() %>% with_default(default = 0)
```

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