

# Package ‘decorators’

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**Type** Package

**Title** Extend the Behaviour of a Function without Explicitly Modifying it

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**Description** A decorator is a function that receives a function, extends its behaviour, and returned the altered function. Any caller that uses the decorated function uses the same interface as it were the original, undecorated function. Decorators serve two primary uses: (1) Enhancing the response of a function as it sends data to a second component; (2) Supporting multiple optional behaviours. An example of the first use is a timer decorator that runs a function, outputs its execution time on the console, and returns the original function's result. An example of the second use is input type validation decorator that during running time tests whether the caller has passed input arguments of a particular class. Decorators can reduce execution time, say by memoization, or reduce bugs by adding defensive programming routines.

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**URL** <https://tidylab.github.io/decorators/>,  
<https://github.com/tidylab/decorators>

**BugReports** <https://github.com/tidylab/decorators/issues>

**Depends** R (>= 3.5)

**Imports** purrr, methods

**Suggests** testthat

**Config/testthat/edition** 3

**Encoding** UTF-8

**Language** en-GB

**RoxygenNote** 7.2.0

**NeedsCompilation** no

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**Repository** CRAN

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time_it	<i>Measure Execution Time of Functions</i>
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## Description

Wrap a function with a timer.

## Usage

```
time_it(func, units = "auto", digits = 2)
```

## Arguments

func	(function) A function to decorate.
units	(character) Units in which the results are desired, including: "auto", "secs", "mins", "hours", "days", and "weeks". See <a href="#">difftime</a> .
digits	(integer) The number of significant digits to be used. See <a href="#">signif</a> .

## Value

(closure) An object that contains the original function bound to the environment of the decorator.

## References

- [timeit Python module](#)
- [Closures in R](#)

## Examples

```
Sys.sleep <- time_it(base::Sys.sleep)
Sys.sleep(0.1)
```

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validate_arguments	<i>Validate the Type of Input Arguments</i>
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## Description

Wrap a function with a input validation.

## Usage

```
validate_arguments(func)
```

## Arguments

func (function) A function to decorate.

## Details

validate\_arguments decorator allows the arguments passed to a function to be parsed and validated using the function's annotations before the function is called.

### How It Works:

validate\_arguments provides an extremely easy way to apply validation to your code with minimal boilerplate. The original function needs to have key-value pairs in its declaration, where the each value carries its designated class.

### When to Use It:

- To protect functions from receiving unexpected types of input arguments.
- In [ValueObjects](#).

### Examples: Functions with Built-in NA classes:

Given a Customer [ValueObject](#)

```
Customer <- function(given = NA_character_, family = NA_character_)
  return(data.frame(given = given, family = family))
```

When Customer is decorated with validate\_arguments

```
Customer <- validate_arguments(Customer)
```

Then passing arguments of any type other then the declared type prompts an informative error.

In the Customer example, both input arguments given and family are declared as character.

```
Customer(given = "Bilbo", family = "Baggins") # Works as both arguments are character
#>   given family
#> 1 Bilbo Baggins
try(Customer(given = "Bilbo", family = 90201)) # Fails because family is not a character
#> Error in Customer(given = "Bilbo", family = 90201) :
#>   family is of type `numeric` rather than `character`!
```

**Value**

(closure) An object that contains the original function bound to the environment of the decorator.

**Note**

The original function must have default values of the designated type.

**References**

- [Similar Python module](#)
- [Closures in R](#)

**Examples**

```
Car <- function(model = NA_character_, hp = NA_real_){  
  return(data.frame(model = model, hp = hp))  
}
```

```
Car <- validate_arguments(Car)  
try(Car(model = 555, hp = 120)) # fails because model is numeric rather than character
```

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