

Package ‘tictoc’

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Title Functions for Timing R Scripts, as Well as Implementations of ``Stack" and ``StackList" Structures

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Description Code execution timing functions 'tic' and 'toc' that can be nested. One can record all timings while a complex script is running, and examine the values later. It is also possible to instrument the timing calls with custom callbacks. In addition, this package provides class 'Stack', implemented as a vector, and class 'StackList', which is a stack implemented as a list, both of which support operations 'push', 'pop', 'first_element', 'last_element' and 'clear'.

URL <https://github.com/jabiru/tictoc>

Depends R (>= 2.15),
methods

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Stack and StackList

Stack and StackList classes and methods

Description

`push` - Append an element.

`pop` - Remove and return the last element.

`clear` - Remove all elements.

`shift` - Remove and return the first element.

`first_element` - Return the first element. We can't use `first` because it's taken by the `dplyr` package and is not an S3 method.

`last_element` - Return the last element. We can't use `last` because it's taken by the `dplyr` package and is not an S3 method.

`size` - Return the number of elements.

`as.Stack` - Creates a new Stack from (typically, vector) `s`.

`as.StackList` - Creates a new StackList from (typically, list) `s`.

`Stack()` - Creates and keeps a stack of items of the same type, implemented as an R vector. The type is determined by the first `push` operation.

`StackList()` - Creates and keeps a list of items of the same type, implemented as an R list. The type is determined by the first `push` operation.

Usage

`push(x, value)`

`pop(x)`

`clear(x)`

`shift(x)`

`first_element(x)`

`last_element(x)`

`size(x)`

`as.Stack(s)`

`as.StackList(s)`

`Stack()`

`StackList()`

Arguments

<code>x</code>	A Stack or StackList object.
<code>value</code>	Value to append.
<code>s</code>	A structure to be converted to a Stack or StackList.

<code>tic</code>	<i>Timing utilities.</i>
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Description

`tic` - Starts the timer and stores the start time and the message on the stack.

`toc` - Notes the current timer and computes elapsed time since the matching call to `tic()`. When `quiet` is `FALSE`, prints the associated message and the elapsed time.

`toc.outmsg` - Formats a message for pretty printing. Redefine this for different formatting.

`tic.clearlog` - Clears the tic/toc log.

`tic.clear` - Clears the tic/toc stack. This could be useful in cases when because of an error the closing `toc()` calls never get executed.

`tic.log` - Returns log messages from calls to tic/toc since the last call to `tic.clearlog`.

Usage

```
tic(msg = NULL, quiet = TRUE, func.tic = NULL, ...)
```

```
toc(log = FALSE, quiet = FALSE, func.toc = toc.outmsg, ...)
```

```
toc.outmsg(tic, toc, msg)
```

```
tic.clearlog()
```

```
tic.clear()
```

```
tic.log(format = TRUE)
```

Arguments

<code>msg</code>	- a text string associated with the timer. It gets printed on a call to <code>toc()</code>
<code>quiet</code>	When <code>TRUE</code> , doesn't print any messages
<code>func.tic</code>	Function producing the formatted message with a signature <code>f(tic, toc, msg, ...)</code> . Here, parameters <code>tic</code> and <code>toc</code> are the elapsed process times in seconds, so the time elapsed between the <code>tic()</code> and <code>toc()</code> calls is computed by <code>toc - tic</code> . <code>msg</code> is the string passed to the <code>tic()</code> call.
<code>...</code>	The other parameters that are passed to <code>func.tic</code> and <code>func.toc</code> .
<code>log</code>	- When <code>TRUE</code> , pushes the timings and the message in a list of recorded timings.
<code>func.toc</code>	Function producing the formatted message with a signature <code>f(tic, toc, msg, ...)</code> . Here, parameters <code>tic</code> and <code>toc</code> are the elapsed process times in seconds, so the time elapsed between the <code>tic()</code> and <code>toc()</code> calls is computed by <code>toc - tic</code> . <code>msg</code> is the string passed to the <code>tic()</code> call.

tic	Time from the call to tic() (proc.time() ["elapsed"])
toc	Time from the call to toc() (proc.time() ["elapsed"])
format	When true, tic.log returns a list of formatted toc() output, otherwise, returns the raw results.

Value

tic returns the timestamp (invisible).

toc returns an (invisible) list containing the timestamps tic, toc, and the message msg.

toc.outmsg returns formatted message.

tic.log returns a list of formatted messages (format = TRUE) or a list of lists containing the timestamps and unformatted messages from prior calls to tic/toc.

See Also

[tictoc](#), [Stack](#)

Examples

```
## Not run:

## Basic use case
tic()
print("Do something...")
Sys.sleep(1)
toc()
# 1.034 sec elapsed

## Inline timing example, similar to system.time()
tic(); for(i in 1:1000000) { j = i / 2 }; toc()
# 0.527 sec elapsed

## Timing multiple steps
tic("step 1")
print("Do something...")
Sys.sleep(1)
toc()
# step 1: 1.005 sec elapsed

tic("step 2")
print("Do something...")
Sys.sleep(1)
toc()
# step 2: 1.004 sec elapsed

## Timing nested code
tic("outer")
  Sys.sleep(1)
  tic("middle")
    Sys.sleep(2)
    tic("inner")
      Sys.sleep(3)
    toc()
  toc()
# inner: 3.004 sec elapsed
toc()
```

```
# middle: 5.008 sec elapsed
toc()
# outer: 6.016 sec elapsed

## Timing in a loop and analyzing the results later using tic.log().
tic.clearlog()
for (x in 1:10)
{
  tic(x)
  Sys.sleep(1)
  toc(log = TRUE, quiet = TRUE)
}
log.txt <- tic.log(format = TRUE)
log.lst <- tic.log(format = FALSE)
tic.clearlog()

timings <- unlist(lapply(log.lst, function(x) x$toc - x$tic))
mean(timings)
# [1] 1.001
writeLines(unlist(log.txt))
# 1: 1.002 sec elapsed
# 2: 1 sec elapsed
# 3: 1.002 sec elapsed
# 4: 1.001 sec elapsed
# 5: 1.001 sec elapsed
# 6: 1.001 sec elapsed
# 7: 1.001 sec elapsed
# 8: 1.001 sec elapsed
# 9: 1.001 sec elapsed
# 10: 1 sec elapsed

## Using custom callbacks in tic/toc
my.msg.tic <- function(tic, msg)
{
  if (is.null(msg) || is.na(msg) || length(msg) == 0)
  {
    outmsg <- paste0(round(toc - tic, 3), " seconds elapsed")
  }
  else
  {
    outmsg <- paste0("Starting ", msg, "...")
  }
  outmsg
}

my.msg.toc <- function(tic, toc, msg, info)
{
  if (is.null(msg) || is.na(msg) || length(msg) == 0)
  {
    outmsg <- paste0(round(toc - tic, 3), " seconds elapsed")
  }
  else
  {
    outmsg <- paste0(info, ": ", msg, ": ",
                     round(toc - tic, 3), " seconds elapsed")
  }
  outmsg
}
```

```

}

tic("outer", quiet = FALSE, func.tic = my.msg.tic)
# Starting outer...
  Sys.sleep(1)
  tic("middle", quiet = FALSE, func.tic = my.msg.tic)
# Starting middle...
    Sys.sleep(2)
    tic("inner", quiet = FALSE, func.tic = my.msg.tic)
    Sys.sleep(3)
# Starting inner...
      toc(quiet = FALSE, func.toc = my.msg.toc, info = "INFO")
# INFO: inner: 3.005 seconds elapsed
      toc(quiet = FALSE, func.toc = my.msg.toc, info = "INFO")
# INFO: middle: 5.01 seconds elapsed
toc(quiet = FALSE, func.toc = my.msg.toc, info = "INFO")
# INFO: outer: 6.014 seconds elapsed

## End(Not run)

```

tictoc

Package tictoc.

Description

Functions for timing, as well as implementations of Stack and StackList structures.

Details

The `tictoc` package provides the timing functions `tic` and `toc` that can be nested. It provides an alternative to `system.time()` with a different syntax similar to that in another well-known software package. `tic` and `toc` are easy to use, and are especially useful when timing several sections in more than a few lines of code.

In general, calls to `tic` and `toc` start the timer when the `tic` call is made and stop the timer when the `toc` call is made, recording the elapsed time between the calls from `proc.time`. The default behavior is to print a simple message with the elapsed time in the `toc` call.

The features include the following:

- nesting of the `tic` and `toc` calls
- suppressing the default output with `quiet = TRUE`
- collecting the timings in user-defined variables
- collecting the timings in a log structure provided by the package (see [tic.log](#))
- providing a custom message for each `tic` call
- using custom callbacks for the `tic` and `toc` calls to redefine the default behavior and/or add other functionality (such as logging to a database)

In addition, this package provides classes `Stack` (implemented as a vector) and `StackList` (a stack implemented as a list), both of which support operations `push`, `pop`, `first_element`, `last_element`, `clear` and `size`.

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URL

<http://github.com/jabiru/tictoc>

Installation from github

```
devtools::install_github("jabiru/tictoc")
```

Author(s)

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See Also

[tic](#), [Stack](#)

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