

# Package ‘cpp11’

July 10, 2020

**Title** A C++11 Interface for R's C Interface

**Version** 0.1.0

**Description** Provides a header only, C++11 interface to R's C interface.  
Compared to other approaches 'cpp11' strives to be safe against long jumps from the C API as well as C++ exceptions, conform to normal R function semantics and supports interaction with 'ALTREP' vectors.

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**Encoding** UTF-8

**LazyData** true

**SystemRequirements** C++11

**RoxygenNote** 7.1.1

**Suggests** bench, brio, cli, callr, covr, decor, desc, glue, ggplot2, knitr, lobstr, mockery, scales, testthat, tibble, utils, vctrs, withr, xml2, rmarkdown

**VignetteBuilder** knitr

**URL** <https://github.com/r-lib/cpp11>

**BugReports** <https://github.com/r-lib/cpp11/issues>

**Config/testthat/edition** 3

**NeedsCompilation** no

**Author** Jim Hester [aut, cre] (<<https://orcid.org/0000-0002-2739-7082>>), RStudio [cph, fnd]

**Maintainer** Jim Hester <[jim.hester@rstudio.com](mailto:jim.hester@rstudio.com)>

**Repository** CRAN

**Date/Publication** 2020-07-10 09:00:02 UTC

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cpp_register	<i>Generates wrappers for registered C++ functions</i>
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### Description

Functions decorated with `[[cpp11::register]]` in files ending in `.cc`, `.cpp`, `.h` or `.hpp` will be wrapped in generated code and registered to be called from R.

### Usage

```
cpp_register(path = ".", quiet = FALSE)
```

### Arguments

path	The path to the package root directory
quiet	If TRUE suppresses output from this function

### Details

In order to use `cpp_register()` the `cli`, `decor`, `desc`, `glue`, `tibble` and `vctrs` packages must also be installed.

### Value

The paths to the generated R and C++ source files (in that order).

### Examples

```
# create a minimal package
dir <- tempfile()
dir.create(dir)

writeLines("Package: testPkg", file.path(dir, "DESCRIPTION"))
writeLines("useDynLib(testPkg, .registration = TRUE)", file.path(dir, "NAMESPACE"))

# create a C++ file with a decorated function
dir.create(file.path(dir, "src"))
writeLines("[[cpp11::register]] int one() { return 1; }", file.path(dir, "src", "one.cpp"))

# register the functions in the package
cpp_register(dir)

# Files generated by registration
file.exists(file.path(dir, "R", "cpp11.R"))
file.exists(file.path(dir, "src", "cpp11.cpp"))

# cleanup
unlink(dir, recursive = TRUE)
```

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`cpp_source`*Compile C++ code*

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## Description

`cpp_source()` compiles and loads a single C++ file for use in R. `cpp_function()` compiles and loads a single function for use in R. `cpp_eval()` evaluates a single C++ expression and returns the result.

## Usage

```
cpp_source(file, code = NULL, env = parent.frame(), clean = TRUE, quiet = TRUE)
```

```
cpp_function(code, env = parent.frame(), clean = TRUE, quiet = TRUE)
```

```
cpp_eval(code)
```

## Arguments

<code>file</code>	A file containing C++ code to compile
<code>code</code>	If non-null, the C++ code to compile
<code>env</code>	The R environment where the R wrapping functions should be defined.
<code>clean</code>	If TRUE, cleanup the files after sourcing
<code>quiet</code>	If 'TRUE', do not show compiler output

## Value

For `cpp_source()` and `cpp_function()` the results of `dyn.load()` (invisibly). For `cpp_eval()` the results of the evaluated expression.

## Examples

```
## Not run:
cpp_source(
  code = '#include "cpp11/integers.hpp"

  [[cpp11::register]]
  int num_odd(cpp11::integers x) {
    int total = 0;
    for (int val : x) {
      if ((val % 2) == 1) {
        ++total;
      }
    }
    return total;
  }
')
```

```
num_odd(as.integer(c(1:10, 15, 23)))

## End(Not run)
```

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```
cpp_vendor          Vendor the cpp11 dependency
```

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## Description

Vendoring is the act of making your own copy of the 3rd party packages your project is using. It is often used in the go language community.

## Usage

```
cpp_vendor(path = ".")
```

## Arguments

path                    The path to the package root directory

## Details

This function vendors cpp11 into your package by copying the cpp11 headers into the `inst/include` folder of your package and adding 'cpp11 version: XYZ' to the top of the files, where XYZ is the version of cpp11 currently installed on your machine.

If you choose to vendor the headers you should *remove* `LinkingTo: cpp11` from your DESCRIPTION.

**Note:** vendoring places the responsibility of updating the code on **you**. Bugfixes and new features in cpp11 will not be available for your code until you run `vector_cpp11()` again.

## Value

The file path to the vendored code (invisibly).

## Examples

```
# create a new directory
dir <- tempfile()
dir.create(dir)

# vendor the cpp11 headers into the directory
cpp_vendor(dir)

list.files(file.path(dir, "inst", "include", "cpp11"))

# cleanup
unlink(dir, recursive = TRUE)
```

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