Package ‘knitr’

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Type Package

Title A General-Purpose Package for Dynamic Report Generation in R

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URL https://yihui.org/knitr/

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knitr-package

A general-purpose tool for dynamic report generation in R

Description

This is an alternative tool to Sweave with a more flexible design and new features like caching and finer control of graphics. It is not limited to LaTeX and is ready to be customized to process other file formats. See the package website in the references for more information and examples.
Note

The pronunciation of knitr is similar to neater (neater than what?) or you can think of knitter (but it is single t). The name comes from knit + R (while Sweave = S + weave).

Author(s)

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References

Full documentation and demos: https://yihui.org/knitr/; FAQ's: https://yihui.org/knitr/faq/

See Also

The core function in this package: knit. If you are an Sweave user, see Sweave2knitr on how to convert Sweave files to knitr.

---

**all_labels**

Get all chunk labels in a document

**Description**

The function `all_labels()` returns all chunk labels as a character vector. Optionally, you can specify a series of conditions to filter the labels. The function `all_rcpp_labels()` is a wrapper function for `all_labels(engine == 'Rcpp')`.

**Usage**

```r
all_labels(...)
```

```r
all_rcpp_labels(...)
```

**Arguments**

... A vector of R expressions, each of which should return TRUE or FALSE. The expressions are evaluated using the local chunk options of each code chunk as the environment, which means global chunk options are not considered when evaluating these expressions. For example, if you set the global chunk option `opts_chunk$set(purl = TRUE)`, `all_labels(purl == TRUE)` will not return the labels of all code chunks, but will only return the labels of those code chunks that have local chunk options `purl = TRUE`.

**Details**

For example, suppose the condition expression is `engine == 'Rcpp'`, the object `engine` is the local chunk option `engine`. If an expression fails to be evaluated (e.g. when a certain object does not exist), FALSE is returned and the label for this chunk will be filtered out.
**all_patterns**

**Value**

A character vector.

**Note**

Empty code chunks are always ignored, including those chunks that are empty in the original document but filled with code using chunk options such as ref.label or code.

**Examples**

```r
# the examples below are meaningless unless you put them in a knitr document
all_labels()
all_labels(engine == "Rcpp")
all_labels(echo == FALSE && results != "hide")
# or separate the two conditions
all_labels(echo == FALSE, results != "hide")
```

---

**all_patterns**

*All built-in patterns*

**Description**

This object is a named list of all built-in patterns.

**Usage**

```r
all_patterns
```

**Format**

An object of class list of length 8.

**References**

Usage: [https://yihui.org/knitr/patterns/](https://yihui.org/knitr/patterns/)

**See Also**

knit_patterns

**Examples**

```r
all_patterns$rnw
all_patterns$html
str(all_patterns)
```
asis_output

Mark an R object with a special class

Description
This is a convenience function that assigns the input object a class named knit_asis, so that knitr will treat it as is (the effect is the same as the chunk option results = 'asis') when it is written to the output.

Usage
asis_output(x, meta = NULL, cacheable = NA)

Arguments
x An R object. Typically a character string, or an object which can be converted to a character string via as.character().
meta Additional metadata of the object to be printed. The metadata will be collected when the object is printed, and accessible via knit_meta().
cacheable Boolean indicating whether this object is cacheable. If FALSE, knitr will stop when caching is enabled on code chunks that contain asis_output().

Details
This function is normally used in a custom S3 method based on the printing function knit_print(). For the cacheable argument, you need to be careful when printing the object involves non-trivial side effects, in which case it is strongly recommended to use cacheable = FALSE to instruct knitr that this object should not be cached using the chunk option cache = TRUE, otherwise the side effects will be lost the next time the chunk is knitted. For example, printing a shiny input element or an HTML widget in an R Markdown document may involve registering metadata about some JavaScript libraries or stylesheets, and the metadata may be lost if we cache the code chunk, because the code evaluation will be skipped the next time. This particular issue has been solved in knitr after v1.13 (the metadata will be saved and loaded automatically when caching is enabled), but not all metadata can be saved and loaded next time and still works in the new R session.

Note
This function only works in top-level R expressions, and it will not work when it is called inside another expression, such as a for-loop. See https://github.com/yihui/knitr/issues/1137 for a discussion.

Examples
# see ?knit_print
cache_engines

Cache engines of other languages

Description

This object controls how to load cached environments from languages other than R (when the chunk option engine is not ‘R’). Each component in this object is a function that takes the current path to the chunk cache and loads it into the language environment.

Usage

```
cache_engines
```

Format

An object of class `list` of length 6.

Details

The cache engine function has one argument `options`, a list containing all chunk options. Note that `options$hash` is the path to the current chunk cache with the chunk’s hash, but without any file extension, and the language engine may write a cache database to this path (with an extension).

The cache engine function should load the cache environment and should know the extension appropriate for the language.

References

See [https://github.com/rstudio/reticulate/pull/167](https://github.com/rstudio/reticulate/pull/167) for an implementation of a cache engine for Python.

clean_cache

Clean cache files that are probably no longer needed

Description

If you remove or rename some cached code chunks, their original cache files will not be automatically cleaned. You can use this function to identify these possible files, and clean them if you are sure they are no longer needed.

Usage

```
clean_cache(clean = FALSE, path = opts_chunk$get("cache.path"))
```
Arguments

- **clean**
  - Boolean; whether to remove the files.
- **path**
  - Path to the cache.

Note

The identification is not guaranteed to be correct, especially when multiple documents share the same cache directory. You are recommended to call `clean_cache(FALSE)` and carefully check the list of files (if any) before you really delete them (`clean_cache(TRUE)`).

This function must be called within a code chunk in a source document, since it needs to know all chunk labels of the current document to determine which labels are no longer present, and delete cache corresponding to these labels.

---

**combine_words**

*Combine multiple words into a single string*

**Description**

When a value from an inline R expression is a character vector of multiple elements, we may want to combine them into a phrase like ‘a and b’, or a, b, and c. That is what this a helper function does.

**Usage**

```
combine_words(words, sep = "", and = " and ", before = "", after = before)
```

**Arguments**

- **words**
  - A character vector.
- **sep**
  - Separator to be inserted between words.
- **and**
  - Character string to be prepended to the last word.
- **before, after**
  - A character string to be added before/after each word.

**Details**

If the length of the input `words` is smaller than or equal to 1, `words` is returned. When `words` is of length 2, the first word and second word are combined using the `and` string. When the length is greater than 2, `sep` is used to separate all words, and the `and` string is prepended to the last word.

**Value**

A character string marked by `xfun::raw_string()`.
Examples

```r
combine_words("a")
combine_words(c("a", "b"))
combine_words(c("a", "b", "c"))
combine_words(c("a", "b", "c"), sep = " / ", and = "")
combine_words(c("a", "b", "c"), and = "")
combine_words(c("a", "b", "c"), before = "\"", after = "\""")
```

---

**current_input**  
**Query the current input filename**

Description

Returns the name of the input file passed to `knit()`.

Usage

```r
current_input(dir = FALSE)
```

Arguments

dir  
Boolean; whether to prepend the current working directory to the file path, i.e. whether to return an absolute path or a relative path.

Value

A character string, if this function is called inside an input document. Otherwise NULL.

---

**dep_auto**  
**Build automatic dependencies among chunks**

Description

When the chunk option `autodep = TRUE`, all names of objects created in a chunk will be saved in a file named `__objects` and all global objects used in a chunk will be saved to `__globals`. This function can analyze object names in these files to automatically build cache dependencies, which is similar to the effect of the `dependson` option. It is supposed to be used in the first chunk of a document and this chunk must not be cached.

Usage

```r
dep_auto(path = opts_chunk$get("cache.path"))
```

Arguments

path  
Path to the dependency file.
Value

NULL. The dependencies are built as a side effect.

Note

Be cautious about path: because this function is used in a chunk, the working directory when the
cunk is evaluated is the directory of the input document in knit, and if that directory differs from
the working directory before calling knit(), you need to adjust the path argument here to make
sure this function can find the cache files `__objects` and `__globals`.

References

https://yihui.org/knitr/demo/cache/

See Also

dep_prev

dep_prev

Make later chunks depend on previous chunks

Description

This function can be used to build dependencies among chunks so that all later chunks depend on
previous chunks, i.e. whenever the cache of a previous chunk is updated, the cache of all its later
chunks will be updated.

Usage

dep_prev()

Value

NULL; the internal dependency structure is updated as a side effect.

References

https://yihui.org/knitr/demo/cache/

See Also

dep_auto
Description

If you have designed a language engine, you may call this function in the end to format and return the text output from your engine.

Usage

```r
engine_output(options, code, out, extra = NULL)
```

Arguments

- **options**: A list of chunk options. Usually this is just the object options passed to the engine function; see `knit_engines`.
- **code**: Source code of the chunk, to which the output hook `source` is applied, unless the chunk option `echo` is FALSE.
- **out**: Text output from the engine, to which the hook `output` is applied, unless the chunk option `results` is 'hide'
- **extra**: Any additional text output that you want to include.

Details

For expert users, an advanced usage of this function is `engine_output(options, out = LIST)` where LIST is a list that has the same structure as the output of `evaluate::evaluate()`. In this case, the arguments `code` and `extra` are ignored, and the list is passed to an internal function `knitr:::wrap()` to return a character vector of final output.

Value

A character string generated from the source code and output using the appropriate output hooks.

Examples

```r
library(knitr)
engine_output(opts_chunk$merge(list(engine = "Rscript")),
               code = "1 + 1", out = "[1] 2")
engine_output(opts_chunk$merge(list(echo = FALSE, engine = "Rscript")),
               code = "1 + 1", out = "[1] 2")

# expert use only
engine_output(opts_chunk$merge(list(engine = "python")),
               out = list(structure(list(src = "1 + 1"), class = "source"),
                          "2"))
```
Description

These functions provide a mechanism to protect the character output of R code chunks. The output is annotated with special markers in `raw_output`; `extract_raw_output()` will extract raw output wrapped in the markers, and replace the raw output with its MD5 digest; `restore_raw_output()` will restore the MD5 digest with the original raw output.

Usage

```r
extract_raw_output(text, markers = raw_markers)
restore_raw_output(text, chunks, markers = raw_markers)
raw_output(x, markers = raw_markers, ...)
```

Arguments

- `text` For `extract_raw_output()`, the content of the input file (e.g. Markdown); for `restore_raw_output()`, the content of the output file (e.g. HTML generated by Pandoc from Markdown).
- `markers` A length-2 character vector to be used to wrap `x`; see `knitr::raw_markers` for the default value.
- `chunks` A named character vector returned from `extract_raw_output()`.
- `x` The character vector to be protected.
- `...` Arguments to be passed to `asis_output()`.

Details

This mechanism is designed primarily for R Markdown pre/post-processors. In an R code chunk, you generate `raw_output()` to the Markdown output. In the pre-processor, you can `extract_raw_output()` from the Markdown file, store the raw output and MD5 digests, and remove the actual raw output from Markdown so Pandoc will never see it. In the post-processor, you can read the Pandoc output (e.g., an HTML or RTF file), and restore the raw output.

Value

For `extract_raw_output()`, a list of two components: `value` (the text with raw output replaced by MD5 digests) and `chunks` (a named character vector, of which the names are MD5 digests and values are the raw output). For `restore_raw_output()`, the restored text.
Examples

library(knitr)
out = c("*hello*", raw_output("<special>content</special> *protect* me!"),
        "*world*"
pre = extract_raw_output(out)
str(pre)
pre$value = gsub("[*][[^[*]]+[^[*]]\][^*]","<em>\1</em>",
    pre$value) # think this as Pandoc conversion
pre$value
# raw output was protected from the conversion (e.g.
# *protect* was not converted)
restore_raw_output(pre$value, pre$chunks)

---

**fig_chunk**

*Obtain the figure filenames for a chunk*

Description

Given a chunk label, the figure file extension, the figure number(s), and the chunk option `fig.path`, return the filename(s).

Usage

```r
fig_chunk(label, ext = "", number, fig.path = opts_chunk$get("fig.path"))
```

Arguments

- **label**: The chunk label.
- **ext**: The figure file extension, e.g. `png` or `pdf`.
- **number**: The figure number (by default `1`).
- **fig.path**: Passed to `fig_path`. By default, the chunk option `fig.path` is used.

Details

This function can be used in an inline R expression to write out the figure filenames without hard-coding them. For example, if you created a plot in a code chunk with the label `foo` and figure path `my-figure/`, you are not recommended to use hard-coded figure paths like `\includegraphics{my-figure/foo-1.pdf}` (in `.Rnw` documents) or ‘![](my-figure/foo-1.png)’ (R Markdown) in your document. Instead, you should use ‘\Sexpr{fig_chunk('foo', 'pdf')}’ or ‘![](r fig_chunk('foo', 'png'))’.

You can generate plots in a code chunk but not show them inside the code chunk by using the chunk option `fig.show = 'hide'`. Then you can use this function if you want to show them elsewhere.

Value

A character vector of filenames.
Examples

```r
library(knitr)
fig_chunk("foo", "png")
fig_chunk("foo", "pdf")
fig_chunk("foo", "svg", 2)  # the second plot of the chunk foo
fig_chunk("foo", "png", 1:5)  # if the chunk foo produced 5 plots
```

Description

The filename of figure files is the combination of options `fig.path` and `label`. This function returns the path of figures for the current chunk by default.

Usage

```r
fig_path(suffix = "", options = opts_current$get(), number)
```

Arguments

- `suffix` A filename suffix; if it is non-empty and does not contain a dot `.`, it will be treated as the filename extension (e.g. `png` will be used as `.png`)
- `options` A list of options; by default the options of the current chunk.
- `number` The current figure number. The default is the internal chunk option `fig.cur`, if this is available.

Value

A character vector of the form `‘fig.path-label-i.suffix’`.

Note

When there are special characters (not alphanumeric or ‘-’ or ‘_’) in the path, they will be automatically replaced with ‘_’. For example, ‘a b/c.d-’ will be sanitized to ‘a_b/c_d-‘. This makes the filenames safe to LaTeX.

Examples

```r
fig_path(".pdf", options = list(fig.path = "figure/abc-", label = "first-plot"))
fig_path(".png", list(fig.path = "foo-", label = "bar"), 1:10)
```
**hook_ffmpeg_html**

*Hooks to create animations in HTML output*

**Description**

`hook_ffmpeg_html()` uses FFmpeg to convert images to a video; `hook_gifski()` uses the **gifski** to convert images to a GIF animation; `hook_scianimator()` uses the JavaScript library SciAnimator to create animations; `hook_r2swf()` uses the **R2SWF** package.

**Usage**

```r
hook_ffmpeg_html(x, options)
hook_gifski(x, options)
hook_scianimator(x, options)
hook_r2swf(x, options)
```

**Arguments**

- **x**
  - Filename for the plot (a character string).
- **options**
  - A list of the current chunk options.

**Details**

These hooks are mainly for the package option `animation.fun`, e.g., you can set `opts_knit$set(animation.fun = hook_scianimator)`.

---

**hook_movecode**

*Some potentially useful document hooks*

**Description**

A document hook is a function to post-process the output document.

**Usage**

```r
hook_movecode(x)
```

**Arguments**

- **x**
  - A character string (the whole output document).
Details

`hook_movecode()` is a document hook to move code chunks out of LaTeX floating environments like ‘figure’ and ‘table’ when the chunks were actually written inside the floats. This function is primarily designed for LyX: we often insert code chunks into floats to generate figures or tables, but in the final output we do not want the code to float with the environments, so we use regular expressions to find out the floating environments, extract the code chunks and move them out. To disable this behavior, use a comment `%knitr_do_not_move` in the floating environment.

Value

The post-processed document as a character string.

Note

These functions are hackish. Also note `hook_movecode()` assumes you to use the default output hooks for LaTeX (not Sweave or listings), and every figure/table environment must have a label.

References

https://yihui.org/knitr/hooks/

Examples

```r
## Not run:
knit_hooks$set(document = hook_movecode)

## End(Not run)
# see example 103 at https://github.com/yihui/knitr-examples
```

Description

Hook functions are called when the corresponding chunk options are not `NULL` to do additional jobs beside the R code in chunks. This package provides a few useful hooks, which can also serve as examples of how to define chunk hooks in `knitr`.

Usage

```r
hook_pdfcrop(before, options, envir)
hook_optipng(before, options, envir)
hook_pngquant(before, options, envir)
hook_mogrify(before, options, envir)
```
hook_pdfcrop

hook_plot_custom(before, options, envir)

hook_purl(before, options, envir)

Arguments

before, options, envir

See References below.

Details

The function hook_pdfcrop() calls plot_crop() to crop the white margins of PDF plots.

The function hook_optipng() calls the program optipng to optimize PNG images. Note the chunk option optipng can be used to provide additional parameters to the program optipng, e.g. optipng = '-o7'.

The function hook_pngquant() calls the program pngquant to optimize PNG images. Note the chunk option pngquant can be used to provide additional parameters to the program pngquant, e.g. pngquant = '--speed=1 --quality=0-50'.

The function hook_mogrify() calls the program mogrify. Note the chunk option mogrify can be used to provide additional parameters to the program mogrify (with default -trim to trim PNG files).

When the plots are not recordable via grDevices::recordPlot() and we save the plots to files manually via other functions (e.g. rgl plots), we can use the chunk hook hook_plot_custom to help write code for graphics output into the output document.

The hook hook_purl() can be used to write the code chunks to an R script. It is an alternative approach to purl, and can be more reliable when the code chunks depend on the execution of them (e.g. read_chunk(), or opts_chunk$set(eval = FALSE)). To enable this hook, it is recommended to associate it with the chunk option purl, i.e. knit_hooks$set(purl = hook_purl). When this hook is enabled, an R script will be written while the input document is being knit. Currently the code chunks that are not R code or have the chunk option purl=FALSE are ignored. Please note when the cache is turned on (the chunk option cache = TRUE), no chunk hooks will be executed, hence hook_purl() will not work, either. To solve this problem, we need cache = 2 instead of TRUE (see https://yihui.org/knitr/demo/cache/ for the meaning of cache = 2).

Note

The two hook functions hook_rgl() and hook_webgl() were moved from knitr to the rgl package (>= v0.95.1247) after knitr v1.10.5, and you can library(rgl) to get them.

References

https://yihui.org/knitr/hooks/#chunk_hooks

See Also

rgl::rgl.snapshot, rgl::rgl.postscript, rgl::hook_rgl, rgl::hook_webgl
Examples

```r
if (require("rgl") && exists("hook_rgl")) knit_hooks$set(rgl = hook_rgl)
# then in code chunks, use the option rgl=TRUE
```

---

**hook_plot_html**

Default plot hooks for different output formats

Description

These hook functions define how to mark up graphics output in different output formats.

Usage

```r
hook_plot_html(x, options)
hook_plot_asciidoc(x, options)
hook_plot_tex(x, options)
hook_plot_md(x, options)
hook_plot_rst(x, options)
hook_plot_textile(x, options)
```

Arguments

- `x` Filename for the plot (a character string).
- `options` A list of the current chunk options.

Details

Depending on the options passed over, `hook_plot_tex` may return the normal `\includegraphics{}` command, or `\input{}` (for tikz files), or `\animategraphics{}` (for animations); it also takes many other options into consideration to align plots and set figure sizes, etc. Similarly, `hook_plot_html`, `hook_plot_md` and `hook_plot_rst` return character strings which are HTML, Markdown, reST code.

In most cases we do not need to call these hooks explicitly, and they were designed to be used internally. Sometimes we may not be able to record R plots using `grDevices::recordPlot()`, and we can make use of these hooks to insert graphics output in the output document; see `hook_plot_custom` for details.

Value

A character string of code, with plot filenames wrapped.
image_uri

Encode an image file to a data URI

Description

This function is the same as xfun::base64_uri() (only with a different function name). It can encode an image file as a base64 string, which can be used in the img tag in HTML.

Usage

image_uri(f)

Arguments

f Path to the image file.

Value

The data URI as a character string.

Author(s)

Wush Wu and Yihui Xie
References

https://en.wikipedia.org/wiki/Data_URI_scheme

Examples

```r
uri = image_uri(file.path(R.home("doc"), "html", "logo.jpg"))
if (interactive()) {
  cat(sprintf("<img src="%s" />", uri), file = "logo.html")
  browseURL("logo.html")  # you can check its HTML source
}
```

Description

This function uses the `httr` package to upload a image to https://imgur.com, and parses the XML response to a list with `xml2` which contains information about the image in the Imgur website.

Usage

```r
imgur_upload(file, key = "9f3460e67f308f6")
```

Arguments

- `file`  
  Path to the image file to be uploaded.
- `key`  
  Client ID for Imgur. By default, this uses a client ID registered by Yihui Xie.

Details

When the output format from `knit()` is HTML or Markdown, this function can be used to upload local image files to Imgur, e.g. set the package option `opts_knit$set(upload.fun = imgur_upload)`, so the output document is completely self-contained, i.e. it does not need external image files any more, and it is ready to be published online.

Value

A character string of the link to the image; this string carries an attribute named `XML` which is a list converted from the response XML file; see Imgur API in the references.

Note

Please register your own Imgur application to get your client ID; you can certainly use mine, but this ID is in the public domain so everyone has access to all images associated to it.

Author(s)

Yihui Xie, adapted from the `imguR` package by Aaron Statham
include_graphics

References

Imgur API version 3: https://apidocs.imgur.com; a demo: https://yihui.org/knitr/demo/upload/

Examples

```r
## Not run:
f = tempfile(fileext = ".png")
png(f)
plot(rnorm(100), main = R.version.string)
dev.off()

res = imgur_upload(f)
res # link to original URL of the image
attr(res, "XML") # all information
if (interactive())
  browseURL(res)

# to use your own key
opts_knit$set(upload.fun = function(file) imgur_upload(file, key = "your imgur key"))

## End(Not run)
```

include_graphics

Embed external images in knitr documents

Description

When plots are not generated from R code, there is no way for knitr to capture plots automatically. In this case, you may generate the images manually and pass their file paths to this function to include them in the output. The major advantage of using this function is that it is portable in the sense that it works for all document formats that knitr supports, so you do not need to think if you have to use, for example, LaTeX or Markdown syntax, to embed an external image. Chunk options related to graphics output that work for normal R plots also work for these images, such as out.width and out.height.

Usage

```r
include_graphics(
  path,
  auto_pdf =getOption("knitr.graphics.auto_pdf", FALSE),
  dpi = NULL,
  error =getOption("knitr.graphics.error", TRUE)
)
```
Arguments

path A character vector of image paths.

auto_pdf Whether to use PDF images automatically when the output format is LaTeX. If TRUE, then e.g. ‘foo/bar.png’ will be replaced by ‘foo/bar.pdf’ if the latter exists. This can be useful since normally PDF images are of higher quality than raster images like PNG, when the output is LaTeX/PDF.

dpi DPI (dots per inch) value. Used to calculate the output width (in inches) of the images. This will be their actual width in pixels, divided by dpi. If not provided, the chunk option dpi is used; if NA, the output width will not be calculated.

error Whether to signal an error if any files specified in the path argument do not exist and are not web resources.

Value

The same as the input character vector path but it is marked with special internal S3 classes so that knitr will convert the file paths to proper output code according to the output format.

Note

This function is supposed to be used in R code chunks or inline R code expressions. You are recommended to use forward slashes (/) as path separators instead of backslashes in the image paths.

The automatic calculation of the output width requires the png package (for PNG images) or the jpeg package (for JPEG images). The width will not be calculated if the chunk option out.width is already provided or dpi = NA.

Description

When the output format is HTML, include_url() inserts an iframe in the output; otherwise it takes a screenshot of the URL and insert the image in the output. include_app() takes the URL of a Shiny app and adds ‘?showcase=0’ to it (to disable the showcase mode), then passes the URL to include_url().

Usage

include_url(url, height = "400px")

include_app(url, height = "400px")

Arguments

url Character string containing a URL.

height Character string with the height of the iframe.
\textbf{inline_expr}  

\textbf{Value}  
An R object with a special class that \texttt{knitr} recognizes internally to generate the iframe or screenshot.

\textbf{See Also}  
\texttt{include_graphics}

\hrulefill

\texttt{inline_expr} \hspace{1cm} \textit{Wrap code using the inline R expression syntax}

\hrulefill

\textbf{Description}  
This is a convenience function to write the "source code" of inline R expressions. For example, if you want to write `\texttt{r 1+1}` literally in an R Markdown document, you may write `\texttt{\`r knitr::inline_expr('1+1')}`; for Rnw documents, this may be `\texttt{\verb|\Sexpr{knitr::inline_expr('1+1')}|}`.

\textbf{Usage}  
\texttt{inline_expr(code, syntax)}

\textbf{Arguments}  
\begin{itemize}
  \item \texttt{code} Character string of the inline R source code.
  \item \texttt{syntax} A character string to specify the syntax, e.g. \texttt{rnw}, \texttt{html}, or \texttt{md}. If not specified, this will be guessed from the knitting context.
\end{itemize}

\textbf{Value}  
A character string marked up using the inline R code syntax.

\textbf{Examples}  
\begin{verbatim}
library(knitr)
inline_expr("1+1", "rnw")
inline_expr("1+1", "html")
inline_expr("1+1", "md")
\end{verbatim}
### is_latex_output

**Check if the current output type is LaTeX or HTML**

**Description**

The function `is_latex_output()` returns TRUE when the output format is LaTeX; it works for both '.Rnw' and R Markdown documents (for the latter, the two Pandoc formats latex and beamer are considered LaTeX output). The function `is_html_output()` only works for R Markdown documents.

**Usage**

```r
is_latex_output()

is_html_output(fmt = pandoc_to(), excludes = NULL)
```

**Arguments**

- `fmt` - A character vector of output formats to be checked. By default, this is the current Pandoc output format.
- `excludes` - A character vector of output formats that should not be considered as HTML format.

**Details**

These functions may be useful for conditional output that depends on the output format. For example, you may write out a LaTeX table in an R Markdown document when the output format is LaTeX, and an HTML or Markdown table when the output format is HTML.

Internally, the Pandoc output format of the current R Markdown document is stored in `knitr::opts_knit$get("rmarkdown.pandoc.to")`. By default, these formats are considered as HTML formats: `c("markdown", "epub", "html", "html5", "revealjs", "s5", "slideous", "slidy")`.

**Examples**

```r
knitr::is_latex_output()
kntir::is_html_output()
kntir::is_html_output(excludes = c("markdown", "epub"))
```

### kable

**Create tables in LaTeX, HTML, Markdown and reStructuredText**

**Description**

A very simple table generator, and it is simple by design. It is not intended to replace any other R packages for making tables. The `kable()` function returns a single table for a single data object, and returns a table that contains multiple tables if the input object is a list of data objects. The `kables()` function is similar to `kable(x)` when `x` is a list of data objects, but `kables()` accepts a list of `kable()` values directly instead of data objects (see examples below).
Usage

kable(
  x,
  format,
  digits = getOption("digits"),
  row.names = NA,
  col.names = NA,
  align,
  caption = NULL,
  label = NULL,
  format.args = list(),
  escape = TRUE,
  ...
)

kables(x, format, caption = NULL, label = NULL)

Arguments

x  For kable(), x is an R object, which is typically a matrix or data frame. For kables(), a list with each element being a returned value from kable().

format  A character string. Possible values are latex, html, pipe (Pandoc’s pipe tables), simple (Pandoc’s simple tables), and rst. The value of this argument will be automatically determined if the function is called within a knitr document. The format value can also be set in the global option knitr.table.format. If format is a function, it must return a character string.

digits  Maximum number of digits for numeric columns, passed to round(). This can also be a vector of length ncol(x), to set the number of digits for individual columns.

row.names  Logical: whether to include row names. By default, row names are included if rownames(x) is neither NULL nor identical to 1:nrow(x).

col.names  A character vector of column names to be used in the table.

align  Column alignment: a character vector consisting of 'l' (left), 'c' (center) and/or 'r' (right). By default or if align = NULL, numeric columns are right-aligned, and other columns are left-aligned. If length(align) == 1L, the string will be expanded to a vector of individual letters, e.g. 'clc' becomes c('c', 'l', 'c'), unless the output format is LaTeX.

caption  The table caption.

label  The table reference label. By default, the label is obtained from knitr::opts_current$get('label').

format.args  A list of arguments to be passed to format() to format table values, e.g. list(big.mark = ',').

escape  Boolean; whether to escape special characters when producing HTML or LaTeX tables. When escape = FALSE, you have to make sure that special characters will not trigger syntax errors in LaTeX or HTML.

...  Other arguments (see Examples).
Details

Missing values (NA) in the table are displayed as NA by default. If you want to display them with other characters, you can set the option knitr.kable.NA, e.g. options(knitr.kable.NA = '') to hide NA values.

Value

A character vector of the table source code.

Note

When using kable() as a top-level expression, you do not need to explicitly print() it due to R’s automatic implicit printing. When it is wrapped inside other expressions (such as a for loop), you must explicitly print(kable(...)).

References

See https://github.com/yihui/knitr-examples/blob/master/091-knitr-table.Rnw for some examples in LaTeX, but they also apply to other document formats.

See Also

Other R packages such as huxtable, xtable, kableExtra, and tables for HTML and LaTeX tables, and ascii and pander for different flavors of markdown output and some advanced features and table styles.

Examples

d1 = head(iris)
d2 = head(mtcars)
# pipe tables by default
kable(d1)
kable(d2[, 1:5])
# no inner padding
kable(d2, format = "pipe", padding = 0)
# more padding
kable(d2, format = "pipe", padding = 2)
kable(d1, format = "latex")
kable(d1, format = "html")
kable(d1, format = "latex", caption = "Title of the table")
kable(d1, format = "html", caption = "Title of the table")
# use the booktabs package
kable(mtcars, format = "latex", booktabs = TRUE)
# use the longtable package
kable(matrix(1000, ncol = 5), format = "latex", digits = 2, longtable = TRUE)
# change LaTeX default table environment
kable(d1, format = "latex", caption = "My table", table.envir = "table*")
# add some table attributes
kable(d1, format = "html", table.attr = "id="mytable"")
# reST output
kable(d2, format = "rst")
# no row names
kable(d2, format = "rst", row.names = FALSE)
# Pandoc simple tables
kable(d2, format = "simple", caption = "Title of the table")
# format numbers using , as decimal point, and ' as thousands separator
x = as.data.frame(matrix(rnorm(60, 1e+06, 10000), 10))
kable(x, format.args = list(decimal.mark = ",", big.mark = "'"))
# save the value
x = kable(d2, format = "html")
cat(x, sep = "\n")
# can also set options(knitr.table.format = 'html') so that the output is HTML

# multiple tables via either kable(list(x1, x2)) or kables(list(kable(x1),
# kable(x2)))
kable(list(d1, d2), caption = "A tale of two tables")
kables(list(kable(d1, align = "l"), kable(d2)), caption = "A tale of two tables")

---

### knit

**Knit a document**

#### Description

This function takes an input file, extracts the R code in it according to a list of patterns, evaluates the code and writes the output in another file. It can also tangle R source code from the input document (`purl()` is a wrapper to `knit(..., tangle = TRUE)`). The `knitr.purl.inline` option can be used to also tangle the code of inline expressions (disabled by default).

#### Usage

```r
knit(
  input,
  output = NULL,
  tangle = FALSE,
  text = NULL,
  quiet = FALSE,
  envir = parent.frame(),
  encoding = "UTF-8"
)
purl(..., documentation = 1L)
```

#### Arguments

- **input**
  - Path to the input file.
- **output**
  - Path to the output file for `knit()`. If `NULL`, this function will try to guess a default, which will be under the current working directory.
- **tangle**
  - Boolean; whether to tangle the R code from the input file (like `utils::Stangle`).
- **text**
  - A character vector. This is an alternative way to provide the input file.
quiet Boolean; suppress the progress bar and messages?

envir Environment in which code chunks are to be evaluated, for example, parent.frame(),
new.env(), or globalenv().

encoding Encoding of the input file; always assumed to be UTF-8 (i.e., this argument is
effectively ignored).

... arguments passed to knit() from purl()

documentation An integer specifying the level of documentation to add to the tangled script. 0
means to output pure code, discarding all text chunks); 1 (the default) means to
add the chunk headers to the code; 2 means to add all text chunks to code as
roxygen comments.

Details

For most of the time, it is not necessary to set any options outside the input document; in other
words, a single call like knit(‘my_input.Rnw’) is usually enough. This function will try to
determine many internal settings automatically. For the sake of reproducibility, it is better practice to
include the options inside the input document (to be self-contained), instead of setting them before
knitting the document.

First the filename of the output document is determined in this way: ‘foo.Rnw’ generates ‘foo.tex’,
and other filename extensions like `.Rtex`, `.Rhtml` (`.Rhtm`) and `.Rmd` (`.Rmarkdown`) will
generate `.tex`, `.html` and `.md` respectively. For other types of files, if the filename contains
`_.knit_.`, this part will be removed in the output file, e.g., ‘foo_knit_.html’ creates the output
‘foo.html’; if `_.knit_.` is not found in the filename, ‘foo.ext’ will produce ‘foo.txt’ if `ext` is not
txt, otherwise the output is ‘foo-out.txt’. If `tangle = TRUE`, ‘foo.ext’ generates an R script
‘foo.R’.

We need a set of syntax to identify special markups for R code chunks and R options, etc. The syntax
is defined in a pattern list. All built-in pattern lists can be found in all_patterns (call it apat).
First knitr will try to decide the pattern list based on the filename extension of the input document,
e.g. ‘Rnw’ files use the list apat$rnw, ‘tex’ uses the list apat$tex, ‘brew’ uses apat$brew and
HTML files use apat$html; for unknown extensions, the content of the input document is matched
against all pattern lists to automatically determine which pattern list is being used. You can also
manually set the pattern list using the knit_patterns object or the pat_rnw series functions in
advance and knitr will respect the setting.

According to the output format (opts_knit$‘out.format’), a set of output hooks will be
set to mark up results from R (see render_latex). The output format can be LaTeX, Sweave and
HTML, etc. The output hooks decide how to mark up the results (you can customize the hooks).
The name knit comes from its counterpart ‘weave’ (as in Sweave), and the name purl (as ‘tangle’
in Stangle) comes from a knitting method ‘knit one, purl one’.

If the input document has child documents, they will also be compiled recursively. See knit_child.
See the package website and manuals in the references to know more about knitr, including the full
documentation of chunk options and demos, etc.

Value

The compiled document is written into the output file, and the path of the output file is returned. If
the text argument is not NULL, the compiled output is returned as a character vector. In other words,
if you provide a file input, you get an output filename; if you provide a character vector input, you get a character vector output.

Note

The working directory when evaluating R code chunks is the directory of the input document by default, so if the R code involves external files (like `read.table()`), it is better to put these files under the same directory of the input document so that we can use relative paths. However, it is possible to change this directory with the package option `opts_knit$set(root.dir = ...)` so all paths in code chunks are relative to this `root.dir`. It is not recommended to change the working directory via `setwd()` in a code chunk, because it may lead to terrible consequences (e.g. figure and cache files may be written to wrong places). If you do use `setwd()`, please note that `knitr` will always restore the working directory to the original one. Whenever you feel confused, print `getwd()` in a code chunk to see what the working directory really is.

If the output argument is a file path, it is strongly recommended to be in the current working directory (e.g. ‘foo.tex’ instead of ‘somewhere/foo.tex’), especially when the output has external dependencies such as figure files. If you want to write the output to a different directory, it is recommended to set the working directory to that directory before you knit a document. For example, if the source document is ‘foo.Rmd’ and the expected output is ‘out/foo.md’, you can write `setwd('out/'); knit('..//foo.Rmd')` instead of `knit('foo.Rmd','out/foo.md')`.

N.B. There is no guarantee that the R script generated by `purl()` can reproduce the computation done in `knit()`. The `knit()` process can be fairly complicated (special values for chunk options, custom chunk hooks, computing engines besides R, and the `envir` argument, etc). If you want to reproduce the computation in a report generated by `knit()`, be sure to use `knit()`, instead of merely executing the R script generated by `purl()`. This seems to be obvious, but some people just do not get it.

References


See `citation('knitr')` for the citation information.

Examples

```r
library(knitr)
(f = system.file("examples", "knitr-minimal.Rnw", package = "knitr"))
knit(f) # compile to tex

purl(f) # tangle R code
purl(f, documentation = 0) # extract R code only
purl(f, documentation = 2) # also include documentation

unlink(c("knitr-minimal.tex", "knitr-minimal.R", "figure"), recursive = TRUE)
```
knit2html

Convert markdown to HTML using knit() and markdownToHTML()

Description

This is a convenience function to knit the input markdown source and call markdown::markdownToHTML() in the markdown package to convert the result to HTML.

Usage

knit2html(
  input,
  output = NULL,
  ..., 
  envir = parent.frame(),
  text = NULL,
  quiet = FALSE,
  encoding = "UTF-8",
  force_v1 = FALSE
)

Arguments

input Path to the input file.
output Path to the output file for knit(). If NULL, this function will try to guess a default, which will be under the current working directory.
... Options passed to markdown::markdownToHTML().
envir Environment in which code chunks are to be evaluated, for example, parent.frame(), new.env(), or globalenv().
text A character vector. This is an alternative way to provide the input file.
quiet Boolean; suppress the progress bar and messages?
encoding Encoding of the input file; always assumed to be UTF-8 (i.e., this argument is effectively ignored).
force_v1 Boolean; whether to force rendering the input document as an R Markdown v1 document, even if it is for v2.

Value

If the argument text is NULL, a character string (HTML code) is returned; otherwise the result is written into a file and the filename is returned.

Note

The markdown package is for R Markdown v1, which is much less powerful than R Markdown v2, i.e. the rmarkdown package (https://rmarkdown.rstudio.com). To render R Markdown v2 documents to HTML, please use rmarkdown::render() instead.
### knit2pandoc

Convert various input files to various output files using knit() and Pandoc

### Description

Knits the input file and compiles to an output format using Pandoc.

### Usage

```r
knit2pandoc(
  input,
  output = NULL,
  tangle = FALSE,
  text = NULL,
  quiet = FALSE,
  envir = parent.frame(),
  to = "html",
  pandoc_wrapper = NULL,
  ...
)
```

### Arguments

- **input**: Path to the input file.
- **output**: Path to the output file for knit(). If NULL, this function will try to guess a default, which will be under the current working directory.
- **tangle**: Boolean; whether to tangle the R code from the input file (like utils::Stangle).
- **text**: A character vector. This is an alternative way to provide the input file.
- **quiet**: Boolean; suppress the progress bar and messages?
- **envir**: Environment in which code chunks are to be evaluated, for example, `parent.frame()`, `new.env()`, or `globalenv()`.

### Examples

```r
# a minimal example
writelines(c("# hello markdown", "\( r \) hello-random, echo=TRUE", "rnorm(5)", "\\``\`"),
  "test.Rmd")
knit2html("test.Rmd")
if (interactive()) browseURL("test.html")

unlink(c("test.Rmd", "test.html", "test.md"))
```
to
pandoc_wrapper
... 
encoding

Value

Returns the output of the pandoc_wrapper function.

Author(s)

Trevor L. Davis

knit2pdf  

Convert Rnw or Rrst files to PDF

Description

Knit the input Rnw or Rrst document, and compile to PDF using tinytex::latexmk() or rst2pdf().

Usage

knit2pdf(
  input,
  output = NULL,
  compiler = NULL,
  envir = parent.frame(),
  quiet = FALSE,
  ...
)

Arguments

input  Path to the input file.
output Path to the output file for knit(). If NULL, this function will try to guess a default, which will be under the current working directory.
compiler A character string giving the LaTeX engine used to compile the tex document to PDF. For an Rrst file, setting compiler to 'rst2pdf' will use rst2pdf to compile the rst file to PDF using the ReportLab open-source library.
envir Environment in which code chunks are to be evaluated, for example, parent.frame(), new.env(), or globalenv()).
quiet Boolean; suppress the progress bar and messages?
... Options to be passed to tinytex::latexmk() or rst2pdf().
**knit2wp**

**Value**

The filename of the PDF file.

**Note**

The `output` argument specifies the output filename to be passed to the PDF compiler (e.g. a tex document) instead of the PDF filename.

**Author(s)**

Ramnath Vaidyanathan, Alex Zvoleff and Yihui Xie

**Examples**

```r
# compile with xelatex
## knit2pdf(..., compiler = 'xelatex')

# compile a reST file with rst2pdf
## knit2pdf(..., compiler = 'rst2pdf')
```

**Description**

This function is a wrapper around the **RWordPress** package. It compiles an R Markdown document to HTML and post the results to WordPress.

**Usage**

```r
knit2wp(input, 
  title = "A post from knitr",
  ...,
  envir = parent.frame(),
  shortcode = FALSE,
  action = c("newPost", "editPost", "newPage"),
  postid,
  publish = TRUE)
```

**Arguments**

- `input` Filename of the Rmd document.
- `title` Title of the post.
- `...` Other meta information of the post, e.g. `categories = c('R', 'Stats')` and `mt_keywords = c('knitr', 'wordpress')`, et cetera.
envir  Environment in which code chunks are to be evaluated, for example, `parent.frame()`, `new.env()`, or `globalenv()`.

shortcode  A length-2 logical vector: whether to use the shortcode `'[sourcecode lang='lang']'`, which can be useful to WordPress.com users for syntax highlighting of source code and output. The first element applies to source code, and the second applies to text output. By default, both are `FALSE`.

action  Whether to create a new post, update an existing post, or create a new page.

postid  If action is `editPost`, the post id `postid` must be specified.

publish  Boolean: publish the post immediately?

Note

This function will convert the encoding of the post and the title to UTF-8 internally. If you have additional data to send to WordPress (e.g. keywords and categories), you may have to manually convert them to the UTF-8 encoding with the `iconv(x, to = 'UTF-8')` function (especially when using Windows).

Author(s)

William K. Morris, Yihui Xie, and Jared Lander

References

https://yihui.org/knitr/demo/wordpress/

Examples

# see the reference
knit_code

Arguments

... Arguments passed to knit.

options A list of chunk options to be used as global options inside the child document. When one uses the child option in a parent chunk, the chunk options of the parent chunk will be passed to the options argument here. Ignored if not a list.

evdir Environment in which code chunks are to be evaluated, for example, parent.frame(), new.env(), or globalenv()).

Value

A character string of the content of the compiled child document is returned as a character string so it can be written back to the parent document directly.

Note

This function is not supposed be called directly like knit(); instead it must be placed in a parent document to let knit() call it indirectly.

The path of the child document is determined relative to the parent document.

References

https://yihui.org/knitr/demo/child/

Examples

# you can write \Sexpr{knit_child('child-doc.Rnw')} in an Rnw file 'main.Rnw' to
# input results from child-doc.Rnw in main.tex

# comment out the child doc by \Sexpr{knit_child('child-doc.Rnw', eval = FALSE)}

---

**knit_code**  
*The code manager to manage code in all chunks*

Description

This object provides methods to manage code (as character vectors) in all chunks in knitr source documents. For example, knitr::knit_code$get() returns a named list of all code chunks (the names are chunk labels), and knitr::knit_code$get('foo') returns the character vector of the code in the chunk with the label foo.

Usage

knit_code

Format

An object of class list of length 6.
Note
The methods on this object include the `set()` method (i.e., you could do something like `knitr::knit_code$set(foo = "my precious new code")`), but we recommend that you do not use this method to modify the content of code chunks, unless you are as creative as Emi Tanaka and know what you are doing.

knit_engines

Engines of other languages

Description
This object controls how to execute the code from languages other than R (when the chunk option `engine` is not `'R'`). Each component in this object is a function that takes a list of current chunk options (including the source code) and returns a character string to be written into the output.

Usage

knit_engines

Format
An object of class `list` of length 6.

Details
The engine function has one argument `options`: the source code of the current chunk is in `options$code`. Usually we can call external programs to run the code via `system2`. Other chunk options are also contained in this argument, e.g. `options$echo` and `options$eval`, etc.

In most cases, `options$engine` can be directly used in command line to execute the code, e.g. `python` or `ruby`, but sometimes we may want to specify the path of the engine program, in which case we can pass it through the `engine.path` option. For example, `engine='ruby',engine.path='/usr/bin/ruby1.9.1'`.

Additional command line arguments can be passed through `options$engine.opts`, e.g. `engine='ruby',engine.opts='-v'`.

See `str(knitr::knit_engines$get())` for a list of built-in language engines.

Note
The Leiningen engine `lein` requires lein-exec plugin; see https://github.com/yihui/knitr/issues/1176 for details.

References
Usage: https://yihui.org/knitr/objects/; examples: https://yihui.org/knitr/demo/engines/

Examples

```
knit_engines$get("python")
knit_engines$get("awk")
names(knit_engines$get())
```
**knit_exit**

**Exit knitting early**

**Description**

Sometimes we may want to exit the knitting process early, and completely ignore the rest of the document. This function provides a mechanism to terminate `knit()`.

**Usage**

`knit_exit(append)`

**Arguments**

`append`  
A character vector to be appended to the results from `knit()` so far. By default, this is `\end{document}` for LaTeX output, and `</body></html>` for HTML output, to make the output document complete. For other types of output, it is an empty string.

**Value**

Invisible `NULL`. An internal signal is set up (as a side effect) to notify `knit()` to quit as if it had reached the end of the document.

**Examples**

```r
# see https://github.com/yihui/knitr-examples/blob/master/096-knit-exit.Rmd
```

**knit_expand**

**A simple macro preprocessor for templating purposes**

**Description**

This function expands a template based on the R expressions in `{{}}` (this tag can be customized by the `delim` argument). These expressions are extracted, evaluated and replaced by their values in the original template.

**Usage**

```r
knit_expand(file, ..., text = read_utf8(file), delim = c("{{", "}")
```
Arguments

- **file**: The template file.
- **...**: A list of variables to be used for the code in the template; note that the variables will be searched for in the parent frame as well.
- **text**: Character vector of lines of code. An alternative way to specify the template code directly. If text is provided, file will be ignored.
- **delim**: A pair of opening and closing delimiters for the templating tags.

Value

A character vector, with the tags evaluated and replaced by their values.

References

This function was inspired by the pyexpander and m4 ([http://www.gnu.org/software/m4/](http://www.gnu.org/software/m4/)), thanks to Frank Harrell.

Examples

```r
# see the knit_expand vignette
if (interactive()) browseVignettes(package = "knitr")
```

---

**knit_filter**  
*Spell check filter for source documents*

**Description**

When performing spell checking on source documents, we may need to skip R code chunks and inline R expressions, because many R functions and symbols are likely to be identified as typos. This function is designed for the filter argument of `aspell()` to filter out code chunks and inline expressions.

**Usage**

```r
knit_filter(ifile, encoding = "UTF-8")
```

**Arguments**

- **ifile**: Filename of the source document.
- **encoding**: Ignored (the file ifile must be encoded in UTF-8).

**Value**

A character vector of the file content, excluding code chunks and inline expressions.
**knit_global**

### Examples

```r
library(knitr)
knitr_example = function(...) system.file("examples", ..., package = "knitr")

if (Sys.which("aspell") != ") {
  # -t means the TeX mode
  utils::aspell(knitr_example("knitr-minimal.Rnw"), knit_filter, control = "-t")

  # -H is the HTML mode
  utils::aspell(knitr_example("knitr-minimal.Rmd"), knit_filter, control = "-H -t")
}
```

---

**knit_global**

*The global environment in which code chunks are evaluated*

---

**Description**

This function makes the environment of a code chunk accessible inside a chunk.

**Usage**

```r
knit_global()
```

**Details**

It returns the `envir` argument of `knit`, e.g. if we call `knit()` in the global environment, `knit_global()` returns R's global environment by default. You can call functions like `ls()` on this environment.

---

**knit_hooks**

*Hooks for R code chunks, inline R code and output*

---

**Description**

A hook is a function of a pre-defined form (arguments) that takes values of arguments and returns desired output. The object `knit_hooks` is used to access or set hooks in this package.

**Usage**

```r
knit_hooks
```

**Format**

An object of class `list` of length 6.
References

Usage: https://yihui.org/knitr/objects/
Components in knit_hooks: https://yihui.org/knitr/hooks/

Examples

knit_hooks$get("source")
knit_hooks$get("inline")

knit_meta

Metadata about objects to be printed

Description

As an object is printed, knitr will collect metadata about it (if available). After knitting is done, all the metadata is accessible via this function. You can manually add metadata to the knitr session via knit_meta_add().

Usage

knit_meta(class = NULL, clean = TRUE)

knit_meta_add(meta, label = "")

Arguments

class

Optionally return only metadata entries that inherit from the specified class. The default, NULL, returns all entries.

clean

Whether to clean the collected metadata. By default, the metadata stored in knitr is cleaned up once retrieved, because we may not want the metadata to be passed to the next knit() call; to be defensive (i.e. not to have carryover metadata), you can call knit_meta() before knit().

meta

A metadata object to be added to the session.

label

A chunk label to indicate which chunk the metadata belongs to.

Value

knit_meta() returns the matched metadata specified by class; knit_meta_add() returns all current metadata.
knit_params

Extract knit parameters from a document

Description
This function reads the YAML front-matter section of a document and returns a list of any parameters declared there. This function exists primarily to support the parameterized reports feature of the rmarkdown package, however is also used by the knitr purrr function to include the default parameter values in the R code it emits.

Usage
knit_params(text, evaluate = TRUE)

Arguments
text Character vector containing the document text.
evaluate Boolean. If TRUE (the default), expression values embedded within the YAML will be evaluated. If FALSE, parameters defined with an expression will have the parsed but unevaluated expression in their value field.

Details
Parameters are included in YAML front matter using the params key. This key can have any number of subkeys each of which represents a parameter. For example:

---
title: My Document
output: html_document
params:
  frequency: 10
  show_details: true
---

Parameter values can be provided inline as illustrated above or can be included in a value sub-key. For example:

---
title: My Document
output: html_document
params:
  frequency:
    value: 10
---
This second form is useful when you need to provide additional details about the parameter (e.g. a label field as describe above).

You can also use R code to yield the value of a parameter by prefacing the value with `!r`, for example:

```yaml
---
title: My Document
output: html_document
params:
  start: !r Sys.Date()
---
```

**Value**

List of objects of class `knit_param` that correspond to the parameters declared in the `params` section of the YAML front matter. These objects have the following fields:

- `name`: The parameter name.
- `value`: The default value for the parameter.
- `expr`: The R expression (if any) that yielded the default value.

In addition, other fields included in the YAML may also be present alongside the name, type, and value fields (e.g. a label field that provides front-ends with a human readable name for the parameter).

---

**knit_params_yaml**  
*Extract knit parameters from YAML text*

**Description**

This function reads the YAML front-matter that has already been extracted from a document and returns a list of any parameters declared there.

**Usage**

```r
knit_params_yaml(yaml, evaluate = TRUE)
```

**Arguments**

- `yaml`: Character vector containing the YAML text.
- `evaluate`: If `TRUE` (the default) expression values embedded within the YAML will be evaluated. If `FALSE`, parameters defined with an expression will have the parsed but unevaluated expression in their `value` field.

**Value**

List of objects of class `knit_param` that correspond to the parameters declared in the `params` section of the YAML. See `knit_params` for a full description of these objects.
**knit_patterns**

*Patterns to match and extract R code in a document*

**Description**

Patterns are regular expressions and will be used in functions like `base::grep()` to extract R code and chunk options. The object `knit_patterns` controls the patterns currently used; see the references and examples for usage. All built-in patterns are available in the list `all_patterns`.

**Usage**

```r
knit_patterns
```

**Format**

An object of class `list` of length 6.

**References**

Usage: [https://yihui.org/knitr/objects/](https://yihui.org/knitr/objects/)

Components in `knit_patterns`: [https://yihui.org/knitr/patterns/](https://yihui.org/knitr/patterns/)

**See Also**

`all_patterns`

**Examples**

```r
library(knitr)
opat = knit_patterns$get()  # old pattern list (to restore later)
apats = all_patterns  # a list of all built-in patterns
str(apats)
knit_patterns$set(apats[["rnw"]])  # set pattern list from apats
knit_patterns$get(c("chunk.begin", "chunk.end", "inline.code"))

# a customized pattern list; has to empty the original patterns first!
knit_patterns$restore()
# we may want to use this in an HTML document
knit_patterns$set(list(chunk.begin = "<!--helloR\s+(.*)", chunk.end = "byeR-->"))
str(knit_patterns$get())

knit_patterns$set(opat)  # put the old patterns back
```
knit_print  A custom printing function

Description

The S3 generic function `knit_print` is the default printing function in `knitr`. The chunk option `render` uses this function by default. The main purpose of this S3 generic function is to customize printing of R objects in code chunks. We can fall back to the normal printing behavior by setting the chunk option `render = normal_print`.

Usage

```r
knit_print(x, ...)
```

```r
normal_print(x, ...)
```

Arguments

- `x`: An R object to be printed
- `...`: Additional arguments passed to the S3 method. Currently ignored, except two optional arguments `options` and `inline`; see the references below.

Details

Users can write custom methods based on this generic function. For example, if we want to print all data frames as tables in the output, we can define a method `knit_print.data.frame` that turns a `data.frame` into a table (the implementation may use other R packages or functions, e.g. `xtable` or `kable()`).

Value

The value returned from the print method should be a character vector or can be converted to a character value. You can wrap the value in `asis_output()` so that `knitr` writes the character value as is in the output.

Note

It is recommended to leave a `...` argument in your method, to allow future changes of the `knit_print()` API without breaking your method.

References

See `vignette('knit_print', package = 'knitr')`. 
Examples

```r
library(knitr)
# write tables for data frames
knit_print.data.frame = function(x, ...) {
  res = paste(c("","", kable(x, output = FALSE)), collapse = "\n")
  asis_output(res)
}
# register the method
registerS3method("knit_print", "data.frame", knit_print.data.frame)
# after you define and register the above method, data frames will be printed as
# tables in knitr, which is different with the default print() behavior
```

Description

Run examples in a package and insert output into the examples code; `knit_rd_all()` is a wrapper around `knit_rd()` to build static HTML help pages for all packages under the 'html' directory of them.

Usage

```r
knit_rd(pkg, links = tools::findHTMLlinks(), frame = TRUE)
knit_rd_all()
```

Arguments

- `pkg` Package name.
- `links` A character vector of links to be passed to `tools::Rd2HTML()`.
- `frame` Boolean: whether to put a navigation frame on the left of the index page.

Value

All HTML pages corresponding to topics in the package are written under the current working directory. An `index.html` is also written as a table of content.

Note

Ideally the html pages should be put under the 'html' directory of an installed package which can be found via `system.file('html', package = 'your_package_name')`, otherwise some links may not work (e.g. the link to the DESCRIPTION file).
Examples

library(knitr)
## Not run:

knit_rd("maps")
knit_rd("rpart")
setwd(system.file("html", package = "ggplot2"))
knit_rd("ggplot2")  # time-consuming!

knit_rd_all()  # this may take really long time if you have many packages installed

## End(Not run)


---

knit_theme  |  Syntax highlighting themes


Description

This object can be used to set or get themes in `knitr` for syntax highlighting.

Usage

knit_theme

Format

An object of class list of length 2.

Details

We can use `knit_theme$set(theme)` to set the theme, and `knit_theme$get(theme)` to get a theme. The theme is a character string for both methods (either the name of the theme, or the path to the CSS file of a theme), and for the `set()` method, it can also be a list returned by the `get()` method. See examples below.

Note

The syntax highlighting here only applies to `.Rnw` (LaTeX) and `.Rhtml` (HTML) documents, and it does not work for other types of documents, such as `.Rmd` (R Markdown, which has its own syntax highlighting themes; see [https://rmarkdown.rstudio.com](https://rmarkdown.rstudio.com)).

Author(s)

Ramnath Vaidyanathan and Yihui Xie

References

For a preview of all themes, see [https://gist.github.com/yihui/3422133](https://gist.github.com/yihui/3422133).
**Examples**

```r
opts_knit$set(out.format = "latex")
knit_theme$set("edit-vim")

knit_theme$get() # names of all available themes

thm = knit_theme$get("acid") # parse the theme to a list
knit_theme$set(thm)

opts_knit$set(out.format = NULL) # restore option
```

**knit_watch**

Watch an input file continuously and knit it when it is updated

**Description**

Check the modification time of an input file continuously in an infinite loop. Whenever the time indicates the file has been modified, call a function to recompile the input file.

**Usage**

```r
knit_watch(input, compile = knit, interval = 1, ...)
```

**Arguments**

- `input` An input file path, or a character vector of multiple input file paths.
- `compile` A function to compile the input file. This could be e.g. `knit` or `knit2pdf`, depending on the input file and the output you want.
- `interval` A time interval to pause in each cycle of the infinite loop.
- `...` Other arguments to be passed to the `compile` function.

**Details**

This is actually a general function not necessarily restricted to applications in *knitr*. You may specify any `compile` function to process the input file. To stop the infinite loop, press the 'Escape' key or 'Ctrl + C' (depending on your editing environment and operating system).

**Examples**

```r
# knit_watch('foo.Rnw', knit2pdf)

# knit_watch('foo.Rmd', rmarkdown::render)
```
load_cache

Load the cache database of a code chunk

Description

If a code chunk has turned on the chunk option cache = TRUE, a cache database will be established after the document is compiled. You can use this function to manually load the database anywhere in the document (even before the code chunk). This makes it possible to use objects created later in the document earlier, e.g. in an inline R expression before the cached code chunk, which is normally not possible because knitr compiles the document in a linear fashion, and objects created later cannot be used before they are created.

Usage

load_cache(
  label,
  object,
  notfound = "NOT AVAILABLE",
  path = opts_chunk$get("cache.path"),
  lazy = TRUE
)

Arguments

label The chunk label of the code chunk that has a cache database.
object The name of the object to be fetched from the database. If it is missing, NULL is returned).
notfound A value to use when the object cannot be found.
path Path of the cache database (normally set in the global chunk option cache.path).
lazy Whether to lazyLoad the cache database (depending on the chunk option cache.lazy = TRUE or FALSE of that code chunk).

Value

Invisible NULL when object is not specified (the cache database will be loaded as a side effect), otherwise the value of the object if found.

Note

Apparently this function loads the value of the object from the previous run of the document, which may be problematic when the value of the object becomes different the next time the document is compiled. Normally you must compile the document twice to make sure the cache database is created, and the object can be read from it. Please use this function with caution.

References

See the example #114 at https://github.com/yihui/knitr-examples.
opts_chunk

Default and current chunk options

Description

Options for R code chunks. When running R code, the object `opts_chunk` (default options) is not modified by chunk headers (local chunk options are merged with default options), whereas `opts_current` (current options) changes with different chunk headers and it always reflects the options for the current chunk.

Usage

```r
opts_chunk

opts_current
```

Format

An object of class `list` of length 6.

An object of class `list` of length 6.

Details

Normally we set up the global options once in the first code chunk in a document using `opts_chunk$set()`, so that all latter chunks will use these options. Note the global options set in one chunk will not affect the options in this chunk itself, and that is why we often need to set global options in a separate chunk.

See `str(knitr::opts_chunk$get())` for a list of default chunk options.

Note

`opts_current` should be treated as read-only and you are supposed to only query its values via `opts_current$get()`. Technically you could also call `opts_current$set()` to change the values, but you are not recommended to do so unless you understand the consequences.

References

Usage: [https://yihui.org/knitr/objects/](https://yihui.org/knitr/objects/)

A list of available options: [https://yihui.org/knitr/options/#chunk-options](https://yihui.org/knitr/options/#chunk-options)

Examples

```r
opts_chunk$get("prompt")
```

```r
opts_chunk$get("fig.keep")
```
opts_hooks

*Hooks for code chunk options*

**Description**

Like `knit_hooks`, this object can be used to set hook functions to manipulate chunk options.

**Usage**

```r
opts_hooks
```

**Format**

An object of class `list` of length 6.

**Details**

For every code chunk, if the chunk option named, say, `FOO`, is not `NULL`, and a hook function with the same name has been set via `opts_hooks$set(FOO = function(options) { options })` (you can manipulate the `options` argument in the function and return it), the hook function will be called to update the chunk options.

**References**

[https://yihui.org/knitr/hooks/](https://yihui.org/knitr/hooks/)

**Examples**

```r
# make sure the figure width is no smaller than fig.height
opts_hooks$set(fig.width = function(options) {
  if (options$fig.width < options$fig.height) {
    options$fig.width = options$fig.height
  }
  options
})
# remove all hooks
opts_hooks$restore()
```

---

opts_knit

*Options for the knitr package*

**Description**

Options including whether to use a progress bar when knitting a document, and the base directory of images, etc.
opts_template

Usage

opts_knit

Format

An object of class list of length 6.

Details

Besides the standard usage (opts_knit$set()), we can also set package options prior to loading knitr or calling knit() using options() in base R. A global option knitr.package.foo in options() will be set as an option foo in opts_knit i.e. global options in base R with the prefix knitr.package. correspond to options in opts_knit. This can be useful to set package options in ‘~/.Rprofile’ without loading knitr.

See str(knitr::opts_knit$get()) for a list of default package options.

References

Usage: https://yihui.org/knitr/objects/
A list of available options: https://yihui.org/knitr/options/#package_options

Examples

opts_knit$get("verbose")
opts_knit$set(verbos = TRUE)  # change it
if (interactive()) {
  # for unnamed chunks, use 'fig' as the figure prefix
  opts_knit$set(unnamed.chunk.label = "fig")
  knit("001-minimal.Rmd")  # from https://github.com/yihui/knitr-examples
}

--------------------------------------------------------------------------------

opts_template  Template for creating reusable chunk options

Description

Creates a template binding a label to a set of chunk options. Every chunk that references the template label will have the specified set of options applied to it.

Usage

opts_template

Format

An object of class list of length 6.
Examples

```r
opts_template$set(myfigures = list(fig.height = 4, fig.width = 4))
# later you can reuse these chunk options by 'opts.label', e.g.

# <<foo, opts.label='myfigures'>>=

# the above is equivalent to <<foo, fig.height=4, fig.width=4>>=
```

---

**pandoc**

A Pandoc wrapper to convert documents to other formats

---

**Description**

This function calls Pandoc to convert documents to other formats such as HTML, LaTeX/PDF and Word, etc, (optionally) based on a configuration file or in-file configurations which specify the options to use for Pandoc.

**Usage**

```r
pandoc(input, format, config = getOption("config.pandoc"), ext = NA)
```

**Arguments**

- `input`: A character vector of Markdown filenames (must be encoded in UTF-8).
- `format`: Name of the output format (see References). This can be a character vector of multiple formats; by default, it is obtained from the `t` field in the configuration. If the configuration is empty or the `t` field is not found, the default output format will be `html`.
- `config`: Path to the Pandoc configuration file. If missing, it is assumed to be a file with the same base name as the `input` file and an extension `.pandoc` (e.g. for `foo.md` it looks for `foo.pandoc`).
- `ext`: Filename extensions. By default, the extension is inferred from the `format`, e.g. `latex` creates `pdf`, `dzslides` creates `html`, and so on.

**Details**

There are two ways to input the Pandoc configurations – through a config file, or embed the configurations in the input file as special comments between `<!-pandoc and -->`.

The configuration file is a DCF file (see `read.dcf`). This file must contain a field named `t` which means the output format. The configurations are written in the form of `tag:value` and passed to Pandoc (if no value is needed, just leave it empty, e.g. the option `standalone` or `s` for short). If there are multiple output formats, write each format and relevant configurations in a block, and separate blocks with blank lines.

If there are multiple records of the `t` field in the configuration, the input markdown file will be converted to all these formats by default, unless the `format` argument is specified as one single format.
**pat_rnw**

### Value

The output filename(s) (or an error if the conversion failed).

### References

Pandoc: [https://pandoc.org](https://pandoc.org); Examples and rules of the configurations: [https://yihui.org/knitr/demo/pandoc/](https://yihui.org/knitr/demo/pandoc/)

Also see R Markdown (v2) at [https://rmarkdown.rstudio.com](https://rmarkdown.rstudio.com). The **rmarkdown** package has several convenience functions and templates that make it very easy to use Pandoc. The RStudio IDE also has comprehensive support for it, so I’d recommend users who are not familiar with command-line tools to use the **rmarkdown** package instead.

### See Also

* read.dcf

### Examples

```r
system("pandoc -h")  # see possible output formats
```

---

| pat_rnw | Set regular expressions to read input documents |

### Description

These are convenience functions to set pre-defined pattern lists (the syntax to read input documents). The function names are built from corresponding file extensions, e.g. **pat_rnw()** can set the Sweave syntax to read Rnw documents.

### Usage

```r
pat_rnw()
pat_brew()
pat_tex()
pat_html()
pat_md()
pat_rst()
pat_asciidoc()
pat_textile()
```
Value

The patterns object `knit_patterns` is modified as a side effect.

Examples

```r
# see how knit_patterns is modified
knit_patterns$get()
pat_rnw()
knot_patterns$get()

knit_patterns$restore() # empty the list
```

---

**plot_crop**

_Crop a plot (remove the edges) using PDFCrop or ImageMagick_

Description

The program _pdfcrop_ (often shipped with a LaTeX distribution) is executed on a PDF plot file, and _magick::image_trim_() is executed for other types of plot files.

Usage

```r
plot_crop(x, quiet = TRUE)
```

Arguments

- `x`  Filename of the plot.
- `quiet`  Whether to suppress standard output from the command.

Details

The program _pdfcrop_ can crop the extra white margins when the plot format is PDF, to make better use of the space in the output document, otherwise we often have to struggle with _graphics::par_() to set appropriate margins. Note _pdfcrop_ often comes with a LaTeX distribution such as TinyTeX, MiKTeX, or TeX Live, and you may not need to install it separately (use _Sys.which_(`pdfcrop`) to check it; if it not empty, you are able to use it). Note that _pdfcrop_ depends on GhostScript. You can check if GhostScript is installed via _tools::find_gs_cmd_().

Value

The original filename.

References

_pdfcrop_:  [https://www.ctan.org/pkg/pdfcrop](https://www.ctan.org/pkg/pdfcrop). If you use TinyTeX, you may install _pdfcrop_ with _tinytex::tlmgr_install_(`pdfcrop`).
**rand_seed**

An unevaluated expression to return `.Random.seed if exists`

---

**Description**

This expression returns `.Random.seed` when `eval(rand_seed)` and NULL otherwise.

**Usage**

`rand_seed`

**Details**

It is designed to work with `opts_chunk$set(cache.extra = rand_seed)` for reproducibility of chunks that involve random number generation. See references.

**References**

https://yihui.org/knitr/demo/cache/

**Examples**

```r
eval(rand_seed)
rnorm(1)  # .Random.seed is created (or modified)
eval(rand_seed)
```

---

**raw_block**

Mark character strings as raw blocks in R Markdown

---

**Description**

Wraps content in a raw attribute block, which protects it from being escaped by Pandoc. See [https: //pandoc.org/MANUAL.html#generic-raw-attribute](https: //pandoc.org/MANUAL.html#generic-raw-attribute). Functions `raw_latex()` and `raw_html()` are shorthands of `raw_block(x, 'latex')` and `raw_block(x, 'html')`, respectively.

**Usage**

```r
raw_block(x, type = "latex", ...)
raw_latex(x, ...)
raw_html(x, ...)
```
Arguments

- **x**: The character vector to be protected.
- **type**: The type of raw blocks (i.e., the Pandoc output format). If you are not sure about the Pandoc output format of your document, insert a code chunk `knitr::pandoc_to()` and see what it returns after the document is compiled.
- ... Arguments to be passed to `asis_output()`.

Examples

```r
knitr::raw_latex("\emph{some text}"")
```

---

**read_chunk**

*Read chunks from an external script*

Description

Chunks can be put in an external script, and this function reads chunks into the current `knitr` session; `read_demo()` is a convenience function to read a demo script from a package.

Usage

```r
read_chunk(
  path,
  lines = read_utf8(path),
  labels = NULL,
  from = NULL,
  to = NULL,
  from.offset = 0L,
  to.offset = 0L,
  roxygen_comments = TRUE
)
```

```r
read_demo(topic, package = NULL, ...)
```

Arguments

- **path**: Path to the R script.
- **lines**: Character vector of lines of code. By default, this is read from `path`.
- **labels**: Character vector of chunk labels (default NULL).
- **from, to**: Numeric vector specifying the starting/ending line numbers of code chunks, or a character vector; see Details.
- **from.offset, to.offset**: Offsets to be added to from/to.
- **roxygen_comments**: Logical dictating whether to keep trailing roxygen-style comments from code chunks in addition to whitespace
Name of the demo and the package. See `utils::demo`.

Arguments passed to `read_chunk`.

Details

There are two approaches to read external code into the current session: (1) Use a special separator of the from `## ----chunk-label` (at least four dashes before the chunk label) in the script; (2) Manually specify the labels, starting and ending positions of code chunks in the script.

The second approach will be used only when `labels` is not `NULL`. For this approach, if `from` is `NULL`, the starting position is 1; if `to` is `NULL`, each of its element takes the next element of `from` minus 1, and the last element of `to` will be the length of `lines` (e.g. when `from = c(1,3,8)` and the script has 10 lines in total, `to` will be `c(2,7,10)`). Alternatively, `from` and `to` can be character vectors as regular expressions to specify the positions; when their length is 1, the single regular expression will be matched against the `lines` vector, otherwise each element of `from/to` is matched against `lines` and the match is supposed to be unique so that the numeric positions returned from `grep()` will be of the same length of `from/to`. Note `labels` always has to match the length of `from/to`.

Value

As a side effect, code chunks are read into the current session so that future chunks can (re)use the code by chunk label references. If an external chunk has the same label as a chunk in the current session, chunk label references by future chunks will refer to the external chunk.

Note

This function can only be used in a chunk which is not cached (chunk option `cache = FALSE`), and the code is read and stored in the current session without being executed (to actually run the code, you have to use a chunk with a corresponding label).

Author(s)

Yihui Xie; the idea of the second approach came from Peter Ruckdeschel (author of the `SweaveListingUtils` package)

References

https://yihui.org/knitr/demo/externalization/

Examples

```r
## put this in foo.R and read_chunk('foo.R')
## ---- my-label ----
1 + 1
lm(y ~ x, data = data.frame(x = 1:10, y = rnorm(10)))

## later you can use <<my-label>>= to reference this chunk

## the 2nd approach
code = c("##a", "1+1", "##b", "##a", "rnorm(10)", "##b")
```
read_chunk(lines = code, labels = "foo")  # put all code into one chunk named foo
read_chunk(lines = code, labels = "foo", from = 2, to = 2)  # line 2 into chunk foo
read_chunk(lines = code, labels = c("foo", "bar"), from = c(1, 4), to = c(3, 6))
  # automatically figure out 'to'
read_chunk(lines = code, labels = c("foo", "bar"), from = c(1, 4))
read_chunk(lines = code, labels = c("foo", "bar"), from = "^#@a", to = "^#@b")
read_chunk(lines = code, labels = c("foo", "bar"), from = "^#@a", to = "^#@b",
  from.offset = 1, to.offset = -1)

## later you can use, e.g., <<foo>>=
knitr:::knit_code$get()  # use this to check chunks in the current session
knitr:::knit_code$restore()  # clean up the session

read_rforge

Read source code from R-Forge

Description

This function reads source code from the SVN repositories on R-Forge.

Usage

read_rforge(path, project, extra = "")

Arguments

path Relative path to the source script on R-Forge.
project Name of the R-Forge project.
extra Extra parameters to be passed to the URL (e.g. extra = '\&revision=48' to check out the source of revision 48).

Value

A character vector of the source code.

Author(s)

Yihui Xie and Peter Ruckdeschel

Examples

library(knitr)

# relies on r-forge.r-project.org being accessible
read_rforge("rgl/R/axes.R", project = "rgl")
read_rforge("rgl/R/axes.R", project = "rgl", extra = "&revision=519")
**render_html**  
*Set or get output hooks for different output formats*

**Description**

The `render_*()` functions set built-in output hooks for LaTeX, HTML, Markdown, reStructuredText, AsciIDoc, and Textile. The `hooks_*()` functions return a list of the output hooks for the corresponding format.

**Usage**

```r
render_html()
hooks_html()
render_asciidoc()
hooks_asciidoc()
render_latex()
hooks_latex()
render_sweave()
hooks_sweave(envirs = c("Sinput", "Soutput", "Schunk"))
render_listings()
hooks_listings(envirs = c("Sinput", "Soutput", "Schunk"))
render_markdown(strict = FALSE, fence_char = "\")
hooks_markdown(strict = FALSE, fence_char = "\")
render_jekyll(highlight = c("pygments", "prettify", "none"), extra = "")
hooks_jekyll(highlight = c("pygments", "prettify", "none"), extra = "")
render_rst(strict = FALSE)
hooks_rst(strict = FALSE)
render_textile()
hooks_textile()
```
Arguments

- **environ**
  Names of LaTeX environments for code input, output, and chunk.

- **strict**
  Boolean; whether to use strict markdown or reST syntax. For markdown, if TRUE, code blocks will be indented by 4 spaces, otherwise they are put in fences made by three backticks. For reST, if TRUE, code is put under two colons and indented by 4 spaces, otherwise it is put under the `sourcecode` directive (this is useful for e.g. Sphinx).

- **fence_char**
  A single character to be used in the code blocks fence. This can be e.g. a backtick or a tilde, depending on your Markdown rendering engine.

- **highlight**
  Which code highlighting engine to use: if pygments, the Liquid syntax is used (default approach Jekyll); if prettify, the output is prepared for the JavaScript library `prettify.js`; if none, no highlighting engine will be used, and code blocks are simply indented by 4 spaces).

- **extra**
  Extra tags for the highlighting engine. For pygments, this can be `linenos`; for prettify, it can be `linenums`.

Details

There are three variants of Markdown documents: ordinary Markdown (`render_markdown(strict = TRUE)`), which calls hooks_markdown(strict = TRUE)), extended Markdown (e.g., GitHub flavored Markdown and Pandoc: `render_markdown(strict = FALSE), which calls hooks_markdown(strict = FALSE)), and Jekyll (a blogging system on GitHub: `render_jekyll(), which calls hooks_jekyll()).

For LaTeX output, there are three variants: knitr's default style (`render_latex()`, which calls hooks_latex() and uses the LaTeX framed package), Sweave style (`render_sweave()`, which calls hooks_sweave() and uses `Sweave.sty`), and listings style (`render_listings()`, which calls hooks_listings() and uses LaTeX listings package).

Default HTML output hooks are set by `render_html()` (which calls hooks_html()); `render_rst()` (which calls hooks_rst()) is for reStructuredText; `render_textile()` (which calls hooks_textile()) is for Textile, and `render_asciidoc()` (which calls hooks_asciidoc()) is AsciiDoc.

The `render_()` functions can be used before `knit()` or in the first chunk of the input document (ideally this chunk has options include = FALSE and cache = FALSE) so that all the following chunks will be formatted as expected.

You can also use `knit_hooks` to set the format's hooks with the hooks_() functions; see references for more info on further customizing output hooks.

Value

NULL for `render_*` functions; corresponding hooks are set as a side effect. A list of output hooks for hooks_() functions.

References


Examples

# below is pretty much what knitr::render_markdown() does:
knitr::knit_hooks$set(knitr::hooks_markdown())

# you can retrieve a subset of the hooks and set them, e.g.,
knitr::knit_hooks$set(knitr::hooks_markdown()["source"])

knitr::knit_hooks$restore()

rocco  

**Knit R Markdown using the classic Docco style**

Description

The classic Docco style is a two-column layout, with text in the left and code in the right column.

Usage

rocco(input, ...)

Arguments

- **input** Path of the input R Markdown file.
- **...** Arguments to be passed to `knit2html`

Details

The output HTML page supports resizing and hiding/showing the two columns. Move the cursor to the center of the page, and it will change to a bidirectional resize cursor; drag the cursor to resize the two columns. Press the key t to hide the code column (show the text column only), and press again to hide the text column (show code).

Value

An HTML file is written, and its name is returned.

Author(s)

Weicheng Zhu and Yihui Xie

References

The Docco package by Jeremy Ashkenas: https://github.com/jashkenas/docco
Examples

```r
tst2pdf

Examples

rocco_view = function(input) {
  owd = setwd(tempdir())
  on.exit(setwd(owd))
  if (!file.exists(input))
    return()
  o = rocco(input, header = "", quiet = TRUE)
  if (interactive())
    browseURL(o)
}

# knit these two vignettes using the docco style
rocco_view(system.file("doc", "docco-classic.Rmd", package = "knitr"))
rocco_view(system.file("doc", "knit_expand.Rmd", package = "knitr"))
```

**rst2pdf**

*A wrapper for rst2pdf*

**Description**

Convert reST to PDF using rst2pdf (which converts from rst to PDF using the ReportLab open-source library).

**Usage**

```r
rst2pdf(input, command = "rst2pdf", options ="")
```

**Arguments**

- **input**: The input rst file.
- **command**: Character string giving the path of the rst2pdf program. If the program is not in your PATH, the full path has to be given here.
- **options**: Extra command line options, e.g. `-v`.

**Value**

An input file `*.rst` will produce `*.pdf` and this output filename is returned if the conversion was successful.

**Author(s)**

Alex Zvoleff and Yihui Xie

**References**

[https://github.com/rst2pdf/rst2pdf](https://github.com/rst2pdf/rst2pdf)

**See Also**

knit2pdf
set_alias

Set aliases for chunk options

Description

We do not have to use the chunk option names given in \texttt{knitr}; we can set aliases for them. The aliases are a named character vector; the names are aliases and the elements in this vector are the real option names.

Usage

\texttt{set\_alias(\ldots)}

Arguments

\ldots

Named arguments. Argument names are aliases, and argument values are real option names.

Value

\texttt{NULL}. \texttt{opts_knit$get('aliases')} is modified as the side effect.

Examples

\begin{verbatim}
set_alias(w = "fig.width", h = "fig.height")
# then we can use options w and h in chunk headers instead of fig.width and
# fig.height
\end{verbatim}

set_header

Set the header information

Description

Some output documents may need appropriate header information. For example, for LaTeX output, we need to write \texttt{\usepackage{tikz}} into the preamble if we use tikz graphics; this function sets the header information to be written into the output.

Usage

\texttt{set\_header(\ldots)}

Arguments

\ldots

Header components; currently possible components are highlight, tikz and framed, which contain the necessary commands to be used in the HTML header or LaTeX preamble. Note that HTML output does not use the tikz and framed components, since they do not make sense in the context of HTML.
Details

By default, **knitr** will set up the header automatically. For example, if the tikz device is used, **knitr** will add `\usepackage{tikz}` to the LaTeX preamble, and this is done by setting the header component tikz to be a character string: `set_header(tikz = \usepackage{tikz}`). Similarly, when we highlight R code using the **highlight** package (i.e. the chunk option highlight = TRUE), **knitr** will set the highlight component of the header vector automatically; if the output type is HTML, this component will be different – instead of LaTeX commands, it contains CSS definitions.

For power users, all the components can be modified to adapt to a customized type of output. For instance, we can change highlight to LaTeX definitions of the **listings** package (and modify the output hooks accordingly), so we can decorate R code using the **listings** package.

Value

The header vector in **opts_knit** is set.

Examples

```
set_header(tikz = "\usepackage{tikz}"

opts_knit$get("header")
```

---

**set_parent**  
*Specify the parent document of child documents*

Description

This function extracts the LaTeX preamble of the parent document to use for the child document, so that the child document can be compiled as an individual document.

Usage

```
set_parent(parent)
```

Arguments

```
parent  
Path to the parent document, relative to the current child document.
```

Details

When the preamble of the parent document also contains code chunks and inline R code, they will be evaluated as if they were in this child document. For examples, when **knitr** hooks or other options are set in the preamble of the parent document, it will apply to the child document as well.

Value

The preamble is extracted and stored to be used later when the complete output is written.
Note

Obviously this function is only useful when the output format is \LaTeX{}. This function only works when the child document is compiled in a standalone mode using \texttt{knit()} (instead of being called in \texttt{knit_child()}); when the parent document is compiled, this function in the child document will be ignored.

References

https://yihui.org/knitr/demo/child/

Examples

## can use, e.g. \Sexpr{set_parent('parent_doc.Rnw')} or

# <<setup-child, include=FALSE>>=

# set_parent('parent_doc.Rnw')

# @

---

**spin**

*Spin goat’s hair into wool*

Description

This function takes a specially formatted \texttt{R} script and converts it to a literate programming document. By default normal text (documentation) should be written after the roxygen comment (\#') and code chunk options are written after \#+ or \#- or \#---- or any of these combinations replacing \# with --.

Usage

```r
spin(
  hair,
  knit = TRUE,
  report = TRUE,
  text = NULL,
  envir = parent.frame(),
  format = c("Rmd", "Rnw", "Rhtml", "Rtex", "Rrst"),
  doc = "^[#\ ]?",
  inline = "^[{][{].*[[]{]}][ ]*$",
  comment = c("^[[#\ ]*/[^]*", "^[.*]/ *$"),
  precious = !knit && is.null(text)
)
```
Arguments

- `hair` Path to the R script. The script must be encoded in UTF-8 if it contains multibyte characters.
- `knit` Logical; whether to compile the document after conversion.
- `report` Logical; whether to generate a report for 'Rmd', 'Rnw' and 'Rtex' output. Ignored if `knit = FALSE`.
- `text` A character vector of code, as an alternative way to provide the R source. If `text` is not NULL, `hair` will be ignored.
- `envir` Environment for `knit()` to evaluate the code.
- `format` Character; the output format. The default is R Markdown.
- `doc` A regular expression to identify the documentation lines; by default it follows the roxygen convention, but it can be customized, e.g. if you want to use `##` to denote documentation, you can use `'^\s*##\s*'`.
- `inline` A regular expression to identify inline R expressions; by default, code of the form `{{code}}` on its own line is treated as an inline expression.
- `comment` A pair of regular expressions for the start and end delimiters of comments; the lines between a start and an end delimiter will be ignored. By default, the delimiters are `/*` at the beginning of a line, and `*/` at the end, following the convention of C comments.
- `precious` logical: whether intermediate files (e.g., .Rmd files when `format` is "Rmd") should be preserved. The default is `FALSE` if `knit` is `TRUE` and the input is a file.

Details

Obviously the goat’s hair is the original R script, and the wool is the literate programming document (ready to be knitted).

Value

If `text` is `NULL`, the path of the final output document, otherwise the content of the output.

Note

If the output format is Rnw and no document class is specified in roxygen comments, this function will automatically add the `article` class to the LaTeX document so that it is complete and can be compiled. You can always specify the document class and other LaTeX settings in roxygen comments manually.

When the output format is Rmd, it is compiled to HTML via `knit2html()`, which uses R Markdown v1 instead of v2. If you want to use the latter, you should call `rmarkdown::render()` instead.

Author(s)

Yihui Xie, with the original idea from Richard FitzJohn (who named it as sowsear() which meant to make a silk purse out of a sow’s ear)
spin_child

References

https://yihui.org/knitr/demo/stitch/

See Also

stitch (feed a template with an R script)

spin_child  

Spin a child R script

Description

This function is similar to knit_child() but is used in R scripts instead. When the main R script is not called via spin(), this function simply executes the child script via sys.source(), otherwise it calls spin() to spin the child script into a source document, and uses knit_child() to compile it. You can call this function in R code, or using the syntax of inline R expressions in spin() (e.g. {{knitr::spin_child('script.R')}}).

Usage

spin_child(input, format)

Arguments

input  
Filename of the input R script.

format  
Passed to format in spin(). If not provided, it will be guessed from the current knitting process.

Value

A character string of the knitted R script.

stitch

Automatically create a report based on an R script and a template

Description

This is a convenience function for small-scale automatic reporting based on an R script and a template. The default template is an Rnw file (LaTeX); stitch_rhtml() and stitch_rmd() are wrappers on top of stitch() using the R HTML and R Markdown templates respectively.
Usage

    stitch(
        script,
        template = system.file("misc", "knitr-template.Rnw", package = "knitr"),
        output = NULL,
        text = NULL,
        envir = parent.frame()
    )

    stitch_rhtml(..., envir = parent.frame())

    stitch_rmd(..., envir = parent.frame())

Arguments

    script  Path to the R script.
    template Path of the template to use. By default, the Rnw template in this package; there
               is also an HTML template in knitr.
    output   Output filename, passed to knit). By default, the base filename of the script is
              used.
    text     A character vector. This is an alternative way to provide the input file.
    envir    Environment in which code chunks are to be evaluated, for example, parent.frame(),
             new.env(), or globalenv()).
    ...      Arguments passed to stitch().

Details

The first two lines of the R script can contain the title and author of the report in comments of
the form ‘## title:’ and ‘## author:’. The template must have a token ‘%sCHUNK_LABEL_HERE’,
which will be used to input all the R code from the script. See the examples below.

The R script may contain chunk headers of the form ‘## ----label,opt1=val1,opt2=val2’,
which will be copied to the template; if no chunk headers are found, the whole R script will be
inserted into the template as one code chunk.

Value

    path of the output document

See Also

    spin (turn a specially formatted R script to a report)

Examples

    s = system.file("misc", "stitch-test.R", package = "knitr")
    if (interactive()) stitch(s)  # compile to PDF
# HTML report
stitch(s, system.file("misc", "knitr-template.Rhtml", package = "knitr"))

# or convert markdown to HTML
stitch(s, system.file("misc", "knitr-template.Rmd", package = "knitr"))

unlink(c("stitch-test.html", "stitch-test.md", "figure"), recursive = TRUE)

---

**Sweave2knitr**

**Convert Sweave to knitr documents**

**Description**

This function converts an Sweave document to a *knitr*-compatible document.

**Usage**

```r
Sweave2knitr(
  file,
  output = gsub("\[.\]\.[^\[].+$", "-knitr.\1", file),
  text = NULL
)
```

**Arguments**

- `file`  
  Path to the Rnw file (must be encoded in UTF-8).
- `output`  
  Output file path. By default, `file.Rnw` produces `file-knitr.Rnw`; if `text` is not NULL, no output file will be produced.
- `text`  
  An alternative way to provide the Sweave code as a character string. If `text` is provided, `file` will be ignored.

**Details**

The pseudo command `\SweaveInput{file.Rnw}` is converted to a code chunk header `<<child='file.Rnw'>>=`.

Similarly `\SweaveOpts{opt = value}` is converted to a code chunk `opts_chunk$set(opt = value)` with the chunk option `include = FALSE`; the options are automatically fixed in the same way as local chunk options (explained below).

The Sweave package `\usepackage{Sweave}` in the preamble is removed because it is not required.

Chunk options are updated if necessary: option values `true` and `false` are changed to `TRUE` and `FALSE` respectively; `fig=TRUE` is removed because it is not necessary for `knitr` (plots will be automatically generated); `fig=FALSE` is changed to `fig.keep='none'`; the devices `pdf/jpeg/png/eps/tikz=TRUE` are converted to `dev='pdf'/'jpeg'/'png'/'postscript'/'tikz'; pdf/jpeg/png/eps/tikz=FALSE are removed; `results=tex/verbatim/hide` are changed to `results='asis'/'markup'/'hide'`; `width/height` are changed to `fig.width/fig.height`; `prefix.string` is changed to `fig.path`; `print/term/prefix=TRUE/FALSE` are removed; most of the character options (e.g. `engine` and...
out.width) are quoted; keep.source=TRUE/FALSE is changed to tidy=FALSE/TRUE (note the order of values).

If a line @ (it closes a chunk) directly follows a previous @, it is removed; if a line @ appears before a code chunk and no chunk is before it, it is also removed, because knitr only uses one ‘@’ after ‘<<<’ by default (which is not the original Noweb syntax but more natural).

**Value**

If text is NULL, the output file is written and NULL is returned. Otherwise, the converted text string is returned.

**Note**

If ‘\SweaveOpts{}’ spans across multiple lines, it will not be fixed, and you have to fix it manually. The LaTeX-style syntax of Sweave chunks are ignored (see ?SweaveSyntaxLatex); only the Noweb syntax is supported.

**References**

The motivation of the changes in the syntax: https://yihui.org/knitr/demo/sweave/

**See Also**

Sweave, gsub

**Examples**

Sweave2knitr(text = "<<<echo=TRUE>>=") # this is valid  
Sweave2knitr(text = "<<<png=true>>=") # dev='png'  
Sweave2knitr(text = "<<<eps=TRUE, pdf=FALSE, results=tex, width=5, prefix.string=foo>>=")  
Sweave2knitr(text = "<<<,png=false,fig=TRUE>>=")  
Sweave2knitr(text = "\\SweaveOpts{echo=false}"))  
Sweave2knitr(text = "\\SweaveInput{hello.Rnw}"")  
# Sweave example in utils  
testfile = system.file("Sweave", "Sweave-test-1.Rnw", package = "utils")  
Sweave2knitr(testfile, output = "Sweave-test-knitr.Rnw")  
if (interactive()) knit("Sweave-test-knitr.Rnw") # or knit2pdf() directly  
unlink("Sweave-test-knitr.Rnw")

---

### vignette_engines

**Package vignette engines**

**Description**

Since R 3.0.0, package vignettes can use non-Sweave engines, and knitr has provided a few engines to compile vignettes via knitr() with different templates. See https://yihui.org/knitr/demo/vignette/ for more information.
Note

If you use the knitr::rmarkdown engine, please make sure that you put rmarkdown in the 'Suggests' field of your DESCRIPTION file. Also make sure the executables pandoc and pandoc-citeproc can be found by rmarkdown during R CMD build. If you build your package from RStudio, this is normally not a problem. If you build the package outside RStudio, run which pandoc and which pandoc-citeproc in the terminal (or Sys.which('pandoc') and Sys.which('pandoc-citeproc') in R) to check if pandoc and pandoc-citeproc can be found. If you use Linux, you may make symlinks to the Pandoc binaries in RStudio: https://rmarkdown.rstudio.com/docs/articles/pandoc.html, or install pandoc and pandoc-citeproc separately.

When the rmarkdown package is not installed or not available, or pandoc or pandoc-citeproc cannot be found, the knitr::rmarkdown engine will fall back to the knitr::knitr engine, which uses R Markdown v1 based on the markdown package.

Examples

```r
library(knitr)
vig_list = tools::vignetteEngine(package = "knitr")
str(vig_list)
vig_list[["knitr::knitr"]][[c("weave", "tangle")]]
vig_list[["knitr::knitr_notangle"]][[c("weave", "tangle")]]
vig_list[["knitr::docco_classic"]][[c("weave", "tangle")]]
```

wrap_rmd

Wrap long lines in Rmd files

Description

This function wraps long paragraphs in an R Markdown file. Other elements are not wrapped: the YAML preamble, fenced code blocks, section headers and indented elements. The main reason for wrapping long lines is to make it easier to review differences in version control.

Usage

```
wrap_rmd(file, width = 80, text = NULL, backup)
```

Arguments

- `file`: The input Rmd file.
- `width`: The expected line width.
- `text`: A character vector of text lines, as an alternative to file. If text is not NULL, file is ignored.
- `backup`: Path to back up the original file in case anything goes wrong. If set to NULL, no backup is made. The default value is constructed from file by adding __ before the base filename.
Value

If file is provided, it is overwritten; if text is provided, a character vector is returned.

Note

Currently it does not wrap blockquotes or lists (ordered or unordered). This feature may or may not be added in the future.

Examples

```r
wrap_rmd(text = c("```", "1+1", "```", "- a list item", "> a quote", "",
       paste(rep("this is a normal paragraph", 5), collapse = " ")))
```

write_bib
Generate BibTeX bibliography databases for R packages

Description

This function uses `utils::citation()` and `utils::toBibtex()` to create bib entries for R packages and write them in a file. It can facilitate the auto-generation of bibliography databases for R packages, and it is easy to regenerate all the citations after updating R packages.

Usage

```r
write_bib(
  x = .packages(),
  file = "",
  tweak = TRUE,
  width = NULL,
  prefix = getOption("knitr.bib.prefix", "R-"),
  lib.loc = NULL
)
```

Arguments

- `x` Package names. Packages which are not installed are ignored.
- `file` The (`.bib`) file to write. By default, or if `NULL`, output is written to the R console.
- `tweak` Whether to fix some known problems in the citations, especially non-standard format of author names.
- `width` Width of lines in bibliography entries. If `NULL`, lines will not be wrapped.
- `prefix` Prefix string for keys in BibTeX entries; by default, it is `R-` unless `option("knitr.bib.prefix")` has been set to another string.
- `lib.loc` A vector of path names of R libraries.
Details

For a package, the keyword ‘R-pkgname’ is used for its bib item, where ‘pkgname’ is the name of the package. Citation entries specified in the ‘CITATION’ file of the package are also included. The main purpose of this function is to automate the generation of the package citation information because it often changes (e.g. author, year, package version, ...).

Value

A list containing the citations. Citations are also written to the file as a side effect.

Note

Some packages on CRAN do not have standard bib entries, which was once reported by Michael Friendly at https://stat.ethz.ch/pipermail/r-devel/2010-November/058977.html. I find this a real pain, and there are no easy solutions except contacting package authors to modify their DESCRIPTION files. Anyway, the argument tweak has provided ugly hacks to deal with packages which are known to be non-standard in terms of the format of citations; tweak = TRUE is by no means intended to hide or modify the original citation information. It is just due to the loose requirements on package authors for the DESCRIPTION file. On one hand, I apologize if it really mangles the information about certain packages; on the other, I strongly recommend package authors to consider the ‘Authors@R’ field (see the manual Writing R Extensions) to make it easier for other people to cite R packages. See knitr:::.tweak.bib for details of tweaks. Also note this is subject to future changes since R packages are being updated. If you want to contribute more tweaks, please edit the file ‘inst/misc/tweak_bib.csv’ in the source package.

Author(s)

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Examples

```r
write_bib(c("RGtk2", "gWidgets"), file = "R-GUI-pkgs.bib")
unlink("R-GUI-pkgs.bib")
write_bib(c("animation", "rgl", "knitr", "ggplot2"))
write_bib(c("base", "parallel", "MASS")) # base and parallel are identical
write_bib("cluster", prefix = ") # a empty prefix
write_bib("digest", prefix = "R-pkg-") # a new prefix
write_bib("digest", tweak = FALSE) # original version

# what tweak=TRUE does
str(knitr:::.tweak.bib)
```
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