

Package ‘drake’

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Title A Pipeline Toolkit for Reproducible Computation at Scale

Description A general-purpose computational engine for data analysis, drake rebuilds intermediate data objects when their dependencies change, and it skips work when the results are already up to date. Not every execution starts from scratch, and completed projects have tangible evidence that they are reproducible. Extensive documentation, from beginner-friendly tutorials to practical examples and more, is available at the reference website [<https://ropensci.github.io/drake/>](https://ropensci.github.io/drake/) and the online manual [<https://ropenscilabs.github.io/drake-manual/>](https://ropenscilabs.github.io/drake-manual/).

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License GPL-3

URL <https://github.com/ropensci/drake>

BugReports <https://github.com/ropensci/drake/issues>

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drake-package	<i>Drake is a pipeline toolkit (https://github.com/pditommaso/awesome-pipeline) and a scalable, R-focused solution for reproducibility and high-performance computing.</i>
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Description

Drake is a pipeline toolkit (<https://github.com/pditommaso/awesome-pipeline>) and a scalable, R-focused solution for reproducibility and high-performance computing.

Author(s)

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References

<https://github.com/ropensci/drake>

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  library(drake)
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Build everything.
  make(my_plan) # Nothing is done because everything is already up to date.
  reg2 = function(d){ # Change one of your functions.
    d$x3 = d$x^3
    lm(y ~ x3, data = d)
  }
  make(my_plan) # Only the pieces depending on reg2() get rebuilt.
  # Write a flat text log file this time.
  make(my_plan, cache_log_file = TRUE)
  # Read/load from the cache.
  readd(small)
  loadd(large)
  head(large)
  clean() # Restart from scratch.
  make(my_plan, jobs = 2) # Distribute over 2 parallel jobs.
  clean() # Restart from scratch.
  # Parallelize over at most 4 separate R sessions.
  # Requires Rtools on Windows.
  # make(my_plan, jobs = 4, parallelism = "Makefile") # nolint
  # Everything is already up to date.
  # make(my_plan, jobs = 4, parallelism = "Makefile") # nolint
  clean(destroy = TRUE) # Totally remove the cache.
  unlink("report.Rmd") # Clean up the remaining files.
})

## End(Not run)
```

analysis_wildcard *Show the analysis wildcard used in [plan_summaries\(\)](#).*

Description

Used to generate workflow plan data frames.

Usage

```
analysis_wildcard()
```

Value

The analysis wildcard used in [plan_summaries\(\)](#).

See Also

[plan_summaries\(\)](#)

Examples

```
# See ?plan_analyses for examples
```

available_hash_algos *List the available hash algorithms for drake caches.*

Description

See the advanced storage tutorial at <https://ropenscilabs.github.io/drake-manual/store.html> for details.

Usage

```
available_hash_algos()
```

Value

A character vector of names of available hash algorithms.

Examples

```
available_hash_algos()
```

bind_plans *Row-bind together drake plans*

Description

combine drake plans together in a way that correctly fills in missing entries.

Usage

```
bind_plans(...)
```

Arguments

... workflow plan data frames (see [drake_plan\(\)](#))

See Also

drake_plan, make

Examples

```
# You might need to refresh your data regularly (see ?triggers).
download_plan <- drake_plan(
  data = target(
    command = download_data(),
    trigger = "always"
  ),
  strings_in_dots = "literals"
)
# But if the data don't change, the analyses don't need to change.
analysis_plan <- drake_plan(
  usage = get_usage_metrics(data),
  topline = scrape_topline_table(data)
)
your_plan <- bind_plans(download_plan, analysis_plan)
your_plan
# make(your_plan) # nolint
```

build_drake_graph *Create the igraph dependency network of your project.*

Description

This function returns an igraph object representing how the targets in your workflow plan data frame depend on each other. (`help(package = "igraph")`). To plot this graph, call to `plot.igraph()` on your graph. See the online manual for enhanced graph visualization functionality.

Usage

```
build_drake_graph(plan = read_drake_plan(), targets = plan$target,
  envir = parent.frame(), verbose = drake::default_verbose(),
  jobs = 1, sanitize_plan = FALSE, console_log_file = NULL,
  trigger = drake::trigger(), cache = NULL)
```

Arguments

plan	workflow plan data frame. A workflow plan data frame is a data frame with a target column and a command column. (See the details in the <code>drake_plan()</code> help file for descriptions of the optional columns.) Targets are the objects and files that drake generates, and commands are the pieces of R code that produce them. Use the function <code>drake_plan()</code> to generate workflow plan data frames easily, and see functions <code>plan_analyses()</code> , <code>plan_summaries()</code> , <code>evaluate_plan()</code> , <code>expand_plan()</code> , and <code>gather_plan()</code> for easy ways to generate large workflow plan data frames.
targets	character vector, names of targets to build. Dependencies are built too. Together, the plan and targets comprise the workflow network (i.e. the graph argument). Changing either will change the network.

envir	environment to use. Defaults to the current workspace, so you should not need to worry about this most of the time. A deep copy of envir is made, so you don't need to worry about your workspace being modified by make. The deep copy inherits from the global environment. Wherever necessary, objects and functions are imported from envir and the global environment and then reproducibly tracked as dependencies.
verbose	logical or numeric, control printing to the console. Use pkgconfig to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
jobs	number of parallel processes or jobs to run. See <code>predict_runtime()</code> to help figure out what the number of jobs should be. Windows users should not set <code>jobs > 1</code> if parallelism is "mclapply" because <code>mclapply()</code> is based on forking. Windows users who use parallelism = "Makefile" will need to download and install Rtools. Imports and targets are processed separately, and they usually have different parallelism needs. To use at most 2 jobs at a time for imports and at most 4 jobs at a time for targets, call <code>make(..., jobs = c(imports = 2, targets = 4))</code> . If parallelism is "Makefile", Makefile-level parallelism is only used for targets in your workflow plan data frame, not imports. To process imported objects and files, drake selects the best parallel backend for your system and uses the number of jobs you give to the jobs argument to <code>make()</code> . To use at most 2 jobs for imports and at most 4 jobs for targets, run <code>make(..., parallelism = "Makefile", jobs = c(imports = 2, targets = 4))</code> or <code>make(..., parallelism = "Makefile", jobs = 2, args = "--jobs=4")</code> .
sanitize_plan	logical, deprecated. If you must, call <code>drake::sanitize_plan()</code> to sanitize the plan and/or <code>drake::sanitize_targets()</code> to sanitize the targets (or just get plan and targets and graph from <code>drake_config()</code>).
console_log_file	character scalar or NULL. If NULL, console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.
trigger	optional, a global trigger for building targets (see <code>trigger()</code>).
cache	an optional storrr cache for memoization

Value

An igraph object representing the workflow plan dependency network.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
```



```
# Make the igraph network connecting all the targets and imports.
g <- build_drake_graph(my_plan)
class(g) # "igraph"
})

## End(Not run)
```

build_times

List the time it took to build each target/import.

Description

Listed times do not include the amount of time spent loading and saving objects! See the type argument for different versions of the build time. (You can choose whether to take storage time into account.)

Usage

```
build_times(..., path = getwd(), search = TRUE, digits = 3,
  cache = get_cache(path = path, search = search, verbose = verbose),
  targets_only = FALSE, verbose = drake::default_verbose(), jobs = 1,
  type = c("build", "command"))
```

Arguments

...	targets to load from the cache: as names (symbols), character strings, or dplyr-style tidyselect commands such as <code>starts_with()</code> .
path	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
digits	How many digits to round the times to.
cache	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
targets_only	logical, whether to only return the build times of the targets (exclude the imports).
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or <code>FALSE</code>: print nothing. 1 or <code>TRUE</code>: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
jobs	number of jobs/workers for parallel processing
type	Type of time you want: either "build" for the full build time including the time it took to store the target, or "command" for the time it took just to run the command.

Value

A data frame of times, each from `system.time()`.

See Also

`built()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  # Show the build times for the mtcars example.
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Build all the targets.
  build_times() # Show how long it took to build each target.
  build_times(starts_with("coef")) # `dplyr`-style `tidyselect`
})

## End(Not run)
```

`built`

List all the built targets (non-imports) in the cache.

Description

Targets are listed in the workflow plan data frame (see `drake_plan()`).

Usage

```
built(path = getwd(), search = TRUE, cache = drake::get_cache(path =
  path, search = search, verbose = verbose),
  verbose = drake::default_verbose(), jobs = 1)
```

Arguments

<code>path</code>	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
<code>search</code>	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
<code>cache</code>	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
<code>verbose</code>	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or <code>FALSE</code> : print nothing. 1 or <code>TRUE</code> : print only targets to build. 2 : in addition, print checks and cache info. 3 : in addition, print any potentially missing items. 4 : in addition, print imports. Full verbosity.
<code>jobs</code>	number of jobs/workers for parallel processing

Value

Character vector naming the built targets in the cache.

See Also

[cached\(\)](#), [loadadd\(\)](#), [imported\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Load drake's canonical example.
  make(my_plan) # Run the project, build all the targets.
  built() # List all the cached targets (built objects and files).
  # For file targets, only the fingerprints/hashes are stored.
})

## End(Not run)
```

cached

Enumerate cached targets or check if a target is cached.

Description

Read/load a cached item with [readadd\(\)](#) or [loadadd\(\)](#).

Usage

```
cached(..., list = character(0), no_imported_objects = FALSE,
  path = getwd(), search = TRUE, cache = NULL,
  verbose = drake::default_verbose(), namespace = NULL, jobs = 1)
```

Arguments

...	objects to load from the cache, as names (unquoted) or character strings (quoted). Similar to ... in remove() .
list	character vector naming objects to be loaded from the cache. Similar to the list argument of remove() .
no_imported_objects	logical, applies only when no targets are specified and a list of cached targets is returned. If no_imported_objects is TRUE, then cached() shows built targets (with commands) plus imported files, ignoring imported objects. Otherwise, the full collection of all cached objects will be listed. Since all your functions and all their global variables are imported, the full list of imported objects could get really cumbersome.
path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.

search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
namespace	character scalar, name of the storr namespace to use for listing objects
jobs	number of jobs/workers for parallel processing

Value

Either a named logical indicating whether the given targets or cached or a character vector listing all cached items, depending on whether any targets are specified

See Also

[built\(\)](#), [imported\(\)](#), [readd\(\)](#), [loadadd\(\)](#), [drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Load drake's canonical example.
  make(my_plan) # Run the project, build all the targets.
  cached(list = 'reg1') # Is 'reg1' in the cache?
  # List all the targets and imported files in the cache.
  # Exclude R objects imported from your workspace.
  cached(no_imported_objects = TRUE)
  # List all targets and imports in the cache.
  cached()
  # Clean the main data.
  clean()
  # The targets and imports are gone.
  cached()
  # But there is still metadata.
  build_times()
  cached(namespace = "build_times")
  # Clear that too.
  clean(purge = TRUE)
  cached(namespace = "build_times")
  build_times()
})

## End(Not run)
```

cache_namespaces	<i>List all the storr cache namespaces used by drake.</i>
------------------	---

Description

Ordinary users do not need to worry about this function. It is just another window into drake's internals.

Usage

```
cache_namespaces(default = storr::storr_environment())$default_namespace)
```

Arguments

default name of the default storr namespace

Value

A character vector of storr namespaces used for drake.

See Also

[make\(\)](#)

Examples

```
cache_namespaces()
```

cache_path	<i>Return the file path where the cache is stored, if applicable.</i>
------------	---

Description

Currently only works with [storr::storr_rds\(\)](#) file system caches.

Usage

```
cache_path(cache = NULL)
```

Arguments

cache the cache whose file path you want to know

Value

File path where the cache is stored.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  clean(destroy = TRUE)
  # Get/create a new drake/storr cache.
  cache <- recover_cache()
  # Show the file path of the cache.
  cache_path(cache = cache)
  # In-memory caches do not have file paths.
  mem <- storr_environment()
  cache_path(cache = mem)
})

## End(Not run)
```

check_plan

Check a workflow plan data frame for obvious errors.

Description

Possible obvious errors include circular dependencies and missing input files.

Usage

```
check_plan(plan = read_drake_plan(), targets = NULL,
  envir = parent.frame(), cache = drake::get_cache(verbose = verbose),
  verbose = drake::default_verbose(), jobs = 1)
```

Arguments

plan	workflow plan data frame, possibly from drake_plan() .
targets	character vector of targets to make
envir	environment containing user-defined functions
cache	optional drake cache. See new_cache() .
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = "0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.")</code> .
jobs	number of jobs/workers for parallel processing

Value

Invisibly return plan.

See Also

[drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  check_plan(my_plan) # Check the workflow plan dataframe for obvious errors.
  unlink("report.Rmd") # Remove an import file mentioned in the plan.
  # If you un-suppress the warnings, check_plan()
  # will tell you that 'report.Rmd' is missing.
  suppressWarnings(check_plan(my_plan))
})

## End(Not run)
```

clean	<i>Remove targets/imports from the cache.</i>
-------	---

Description

Cleans up the work done by [make\(\)](#).

Usage

```
clean(..., list = character(0), destroy = FALSE, path = getwd(),
  search = TRUE, cache = NULL, verbose = drake::default_verbose(),
  jobs = 1, force = FALSE, garbage_collection = FALSE,
  purge = FALSE)
```

Arguments

...	targets to remove from the cache: as names (symbols), character strings, or dplyr-style tidyselect commands such as <code>starts_with()</code> .
list	character vector naming targets to be removed from the cache. Similar to the list argument of remove() .
destroy	logical, whether to totally remove the drake cache. If <code>destroy</code> is <code>FALSE</code> , only the targets from <code>make()</code> are removed. If <code>TRUE</code> , the whole cache is removed, including session metadata, etc.
path	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, <code>path</code> and <code>search</code> are ignored.

verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
jobs	Number of jobs for light parallelism (disabled on Windows).
force	logical, whether to try to clean the cache even though the project may not be back compatible with the current version of drake.
garbage_collection	logical, whether to call <code>cache\$gc()</code> to do garbage collection. If TRUE, cached data with no remaining references will be removed. This will slow down <code>clean()</code> , but the cache could take up far less space afterwards. See the <code>gc()</code> method for <code>storr</code> caches.
purge	logical, whether to remove objects from metadata namespaces such as "meta", "build_times", and "errors".

Details

By default, `clean()` removes references to cached data. To deep-clean the data to free up storage/memory, use `clean(garbage_collection = TRUE)`. Garbage collection is slower, but it purges data with no remaining references. To just do garbage collection without cleaning, see `drake_gc()`. Also, for `clean()`, you must be in your project's working directory or a subdirectory of it. `clean(search = TRUE)` searches upwards in your folder structure for the drake cache and acts on the first one it sees. Use `search = FALSE` to look within the current working directory only. **WARNING:** This deletes ALL work done with `make()`, which includes file targets as well as the entire drake cache. Only use `clean()` if you're sure you won't lose anything important.

Value

Invisibly return NULL.

See Also

[drake_gc\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  # List objects in the cache, excluding R objects
  # imported from your workspace.
  cached(no_imported_objects = TRUE)
  # Remove 'summ_regression1_large' and 'small' from the cache.
  clean(summ_regression1_large, small)
```



```

# Those objects should be gone.
cached(no_imported_objects = TRUE)
# How about `tidyselect`?
clean(starts_with("coef"))
cached(no_imported_objects = TRUE)
# Rebuild the missing targets.
make(my_plan)
# Remove all the targets and imports.
# On non-Windows machines, parallelize over at most 2 jobs.
clean(jobs = 2)
# Make the targets again.
make(my_plan)
# Garbage collection removes data whose references are no longer present.
# It is slow, but you should enable it if you want to reduce the
# size of the cache.
clean(garbage_collection = TRUE)
# All the targets and imports are gone.
cached()
# But there is still cached metadata.
names(read_drake_meta())
build_times()
# To make even more room, use the "purge" flag.
clean(purge = TRUE)
names(read_drake_meta())
build_times()
# Completely remove the entire cache (default: '.drake/' folder).
clean(destroy = TRUE)
})

## End(Not run)

```

cleaned_namespaces *For drake caches, list the storr namespaces that are cleaned during a call to `clean()`.*

Description

All these namespaces store target-level data, but not all target-level namespaces are cleaned during `clean()`.

Usage

```
cleaned_namespaces(default = storr::storr_environment())$default_namespace)
```

Arguments

default Name of the default storr namespace.

Value

A character vector of storrr namespaces that are cleaned during `clean()`.

See Also

`cache_namespaces()`, `clean()`

Examples

```
cleaned_namespaces()
```

code_to_plan	<i>Turn an R script file or knitr / R Markdown report into a drake workflow plan data frame.</i>
--------------	--

Description

In your script or knitr / R Markdown code chunks, you can assign expressions to variables, and `code_to_plan()` will turn them into commands and targets, respectively.

Usage

```
code_to_plan(path)
```

Arguments

path a file path to an R script or knitr report.

Details

This feature is easy to break, so there are some rules for your code file:

1. Stick to assigning a single expression to a single target at a time. For multi-line commands, please enclose the whole command in curly braces. Conversely, compound assignment is not supported (e.g. `target_1 <- target_2 <- target_3 <- get_data()`).
2. Once you assign an expression to a variable, do not modify the variable any more. The target/command binding should be permanent.
3. Keep it simple. Please use the assignment operators rather than `assign()` and similar functions.

See Also

`drake_plan()`, `make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  drake_example("code_to_plan") # Download some code files to make plans.
  # Read the code and Markdown files in the downloaded "code_to_plan"
  # folder for details.
  plan <- code_to_plan("code_to_plan/script.R")
  plan2 <- code_to_plan("code_to_plan/report.Rmd")
  identical(plan, plan2) # should be TRUE
  print(plan)
  make(plan)
  readd(discrepancy)
})

## End(Not run)
```

configure_cache

Configure the hash algorithms, etc. of a drake cache.

Description

The purpose of this function is to prepare the cache to be called from `make()`.

Usage

```
configure_cache(cache = drake::get_cache(verbose = verbose),
  short_hash_algo = drake::default_short_hash_algo(cache = cache),
  long_hash_algo = drake::default_long_hash_algo(cache = cache),
  log_progress = FALSE, overwrite_hash_algos = FALSE,
  verbose = drake::default_verbose(), jobs = 1,
  init_common_values = FALSE)
```

Arguments

cache	cache to configure
short_hash_algo	short hash algorithm for drake. The short algorithm must be among <code>available_hash_algos()</code> , which is just the collection of algorithms available to the <code>algo</code> argument in <code>digest::digest()</code> . See <code>default_short_hash_algo()</code> for more.
long_hash_algo	long hash algorithm for drake. The long algorithm must be among <code>available_hash_algos()</code> , which is just the collection of algorithms available to the <code>algo</code> argument in <code>digest::digest()</code> . See <code>default_long_hash_algo()</code> for more.
log_progress	deprecated logical. Previously toggled whether to clear the recorded build progress if this cache was used for previous calls to <code>make()</code> .
overwrite_hash_algos	logical, whether to try to overwrite the hash algorithms in the cache with any user-specified ones.

verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
jobs	number of jobs for parallel processing
init_common_values	logical, whether to set the initial drake version in the cache and other common values. Not always a thread safe operation, so should only be TRUE on the master process

Value

A drake/storr cache.

See Also

[default_short_hash_algo\(\)](#), [default_long_hash_algo\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  clean(destroy = TRUE)
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- make(my_plan) # Run the project, build all the targets.
  # Locate the drake/storr cache of the project
  # inside the master internal configuration list.
  cache <- config$cache
  long_hash(cache) # Return the long hash algorithm used.
  # Change the long hash algorithm of the cache.
  cache <- configure_cache(
    cache = cache,
    long_hash_algo = "murmur32",
    overwrite_hash_algos = TRUE
  )
  long_hash(cache) # Show the new long hash algorithm.
  make(my_plan) # Changing the long hash puts the targets out of date.
})

## End(Not run)
```

dataset_wildcard	<i>Show the dataset wildcard used in plan_analyses() and plan_summaries().</i>
------------------	--

Description

Used to generate workflow plan data frames.

Usage

```
dataset_wildcard()
```

Value

The dataset wildcard used in [plan_analyses\(\)](#) and [plan_summaries\(\)](#).

See Also

[plan_analyses\(\)](#)

Examples

```
# See ?plan_analyses for examples
```

default_cache_path	<i>Return the default file path of the drake/storr cache.</i>
--------------------	---

Description

Applies to file system caches only.

Usage

```
default_cache_path()
```

Value

Default file path of the drake/storr cache.

Examples

```
## Not run:  
default_cache_path()  
  
## End(Not run)
```

default_hook	<i>Default hook argument to <code>make()</code>.</i>
--------------	--

Description

Most users do not need to micromanage hooks.

Usage

```
default_hook(code)
```

Arguments

code	Placeholder for the code to build a target/import.
------	--

Value

A function that you can supply to the hook argument of `make()`.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Everything gets built normally.
  make(my_plan, hook = default_hook)
  cached() # List the cached targets and imports.
})

## End(Not run)
```

default_long_hash_algo	<i>Return the default long hash algorithm for <code>make()</code>.</i>
------------------------	--

Description

See the advanced storage tutorial at <https://ropenscilabs.github.io/drake-manual/store.html> for details.

Usage

```
default_long_hash_algo(cache = NULL)
```

Arguments

cache optional drake cache. When you `configure_cache(cache)` without supplying a long hash algorithm, `default_long_hash_algo(cache)` is the long hash algorithm that drake picks for you.

Details

The long algorithm must be among `available_hash_algos()`, which is just the collection of algorithms available to the `algo` argument in `digest::digest()`.

If you express no preference for a hash, drake will use the long hash for the existing project, or `default_long_hash_algo()` for a new project. If you do supply a hash algorithm, it will only apply to fresh projects (see `clean(destroy = TRUE)`). For a project that already exists, if you supply a hash algorithm, drake will warn you and then ignore your choice, opting instead for the hash algorithm already chosen for the project in a previous `make()`.

Drake uses both a short hash algorithm and a long hash algorithm. The shorter hash has fewer characters, and it is used to generate the names of internal cache files and auxiliary files. The decision for short names is important because Windows places restrictions on the length of file paths. On the other hand, some internal hashes in drake are never used as file names, and those hashes can use a longer hash to avoid collisions.

Value

A character vector naming a hash algorithm.

See Also

`make()`, `available_hash_algos()`

Examples

```
default_long_hash_algo()
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Run the project and return the internal master configuration list.
  config <- make(my_plan)
  # Locate the storrr cache.
  cache <- config$cache
  # Get the default long hash algorithm of an existing cache.
  default_long_hash_algo(cache)
})

## End(Not run)
```

`default_Makefile_args` *Return the default value of the args argument to `make()`.*

Description

For `make(..., parallelism = "Makefile")`, this function configures the default arguments to `system2()`. It is an internal function, and most users do not need to worry about it.

Usage

```
default_Makefile_args(jobs, verbose)
```

Arguments

<code>jobs</code>	number of jobs
<code>verbose</code>	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>

Value

args for `system2(command, args)`

Examples

```
default_Makefile_args(jobs = 2, verbose = FALSE)
default_Makefile_args(jobs = 4, verbose = TRUE)
```

`default_Makefile_command`

Give the default command argument to `make()`.

Description

Relevant for "Makefile" parallelism only.

Usage

```
default_Makefile_command()
```


Value

A character scalar naming a Linux/Unix command to run a Makefile.

Examples

```
default_Makefile_command()
```

```
default_parallelism    Show the default parallelism argument to make\(\) for your system.
```

Description

Returns 'parLapply' for Windows machines and 'mclapply' for other platforms.

Usage

```
default_parallelism()
```

Value

The default parallelism option for your system.

See Also

[make\(\)](#), [shell_file\(\)](#)

Examples

```
default_parallelism()
```

```
default_recipe_command    Show the default recipe command for make(..., parallelism = "Makefile").
```

Description

See the help file of [Makefile_recipe\(\)](#) for details and examples.

Usage

```
default_recipe_command()
```

Value

A character scalar with the default recipe command.

See Also

[Makefile_recipe\(\)](#)

Examples

```
default_recipe_command()
```

```
default_short_hash_algo
```

Return the default short hash algorithm for make().

Description

See the advanced storage tutorial at <https://ropenscilabs.github.io/drake-manual/store.html> for details.

Usage

```
default_short_hash_algo(cache = NULL)
```

Arguments

cache	optional drake cache. When you configure_cache() without supplying a short hash algorithm, <code>default_short_hash_algo(cache)</code> is the short hash algorithm that drake picks for you.
-------	--

Details

The short algorithm must be among [available_hash_algos\(\)](#), which is just the collection of algorithms available to the `algo` argument in [digest::digest\(\)](#).

If you express no preference for a hash, drake will use the short hash for the existing project, or [default_short_hash_algo\(\)](#) for a new project. If you do supply a hash algorithm, it will only apply to fresh projects (see `clean(destroy = TRUE)`). For a project that already exists, if you supply a hash algorithm, drake will warn you and then ignore your choice, opting instead for the hash algorithm already chosen for the project in a previous `make()`.

Drake uses both a short hash algorithm and a long hash algorithm. The shorter hash has fewer characters, and it is used to generate the names of internal cache files and auxiliary files. The decision for short names is important because Windows places restrictions on the length of file paths. On the other hand, some internal hashes in drake are never used as file names, and those hashes can use a longer hash to avoid collisions.

Value

A character vector naming a hash algorithm.

See Also

[make\(\)](#), [available_hash_algos\(\)](#)

Examples

```
default_short_hash_algo()
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Run the project and return the internal master configuration list.
  config <- make(my_plan)
  # Locate the storr cache.
  cache <- config$cache
  # Get the default short hash algorithm of an existing cache.
  default_short_hash_algo(cache)
})

## End(Not run)
```

dependency_profile *Find out why a target is out of date.*

Description

The dependency profile can give you a hint as to why a target is out of date. It can tell you if

- at least one input file changed,
- at least one output file changed,
- or a non-file dependency changed. For this last part, the imports need to be up to date in the cache, which you can do with `outdated()` or `make(skip_targets = TRUE)`. Unfortunately, `dependency_profile()` does not currently get more specific than that.

Usage

```
dependency_profile(target, config = drake::read_drake_config(),
  character_only = FALSE)
```

Arguments

`target` name of the target

`config` configuration list output by [drake_config\(\)](#) or [make\(\)](#)

`character_only` logical, whether to assume target is a character string rather than a symbol

Value

A data frame of the old hashes and new hashes of the data frame, along with an indication of which hashes changed since the last `make()`.

See Also

`diagnose()`, `deps_code()`, `make()`, `drake_config()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Load drake's canonical example.
  config <- make(my_plan) # Run the project, build the targets.
  # Get some example dependency profiles of targets.
  dependency_profile(small, config = config)
  # Change a dependency.
  simulate <- function(x){}
  # Update the in-memory imports in the cache
  # so dependency_profile can detect changes to them.
  # Changes to targets are already cached.
  make(my_plan, skip_targets = TRUE)
  # The dependency hash changed.
  dependency_profile(small, config = config)
})

## End(Not run)
```

deps_code

List the dependencies of a function, workflow plan command, or knitr report source file.

Description

Intended for debugging and checking your project. The dependency structure of the components of your analysis decides which targets are built and when.

Usage

```
deps_code(x)
```

Arguments

x a language object (code), character string (code as text), or imported function to analyze for dependencies.

Details

The `globals` slot of the output list contains candidate globals only. Each global will be treated as an actual dependency if and only if it is either a target or an item in the `envir` argument to `make()`.

If the argument is a knitr report (for example, `file_store("report.Rmd")` or `"\"report.Rmd\""`) the the dependencies of the expected compiled output will be given. For example, `deps_code(file_store("report.Rmd"))` will return target names found in calls to `loadadd()` and `readd()` in active code chunks. These `loadadd()/readd()` targets are needed in order to run `knit(knitr_in("report.Rmd"))` to produce the output file "report.md", so technically, they are dependencies of "report.md", not "report.Rmd".

The `file_store()` function alerts drake utility functions to file names by enclosing them in literal double quotes. (For example, `file_store("report.Rmd")` is just `"\"report.Rmd\""`.)

Drake takes special precautions so that a target/import does not depend on itself. For example, `deps_code(f)` might return "f" iff() is a recursive function, but make() just ignores this conflict and runs as expected. In other words, make() automatically removes all self-referential loops in the dependency network.`

Value

Names of dependencies listed by type (object, input file, etc). The `globals` slot of the output list contains candidate globals only. Each global will be treated as an actual dependency if and only if it is either a target or an item in the `envir` argument to `make()`.

See Also

`deps_target` `deps_files` `make` `drake_plan` `drake_config`

Examples

```
# Your workflow likely depends on functions in your workspace.
f <- function(x, y){
  out <- x + y + g(x)
  saveRDS(out, "out.rds")
}
# Find the dependencies of f. These could be R objects/functions
# in your workspace or packages. Any file names or target names
# will be ignored.
deps_code(f)
# Define a workflow plan data frame that uses your function f().
my_plan <- drake_plan(
  x = 1 + some_object,
  my_target = x + readRDS(file_in("tracked_input_file.rds")),
  return_value = f(x, y, g(z + w)),
  strings_in_dots = "literals"
)
# Get the dependencies of workflow plan commands.
# Here, the dependencies could be R functions/objects from your workspace
# or packages, imported files, or other targets in the workflow plan.
deps_code(my_plan$command[1])
deps_code(my_plan$command[2])
```

```

deps_code(my_plan$command[3])
# New: you can also supply language objects.
deps_code(expression(x + 123))
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Dependencies of the knitr-generated targets like 'report.md'
  # include targets/imports referenced with `readd()` or `load()``.
  deps_code(file_store("report.Rmd"))
})

## End(Not run)

```

deps_target

List the dependencies of one or more targets

Description

Intended for debugging and checking your project. The dependency structure of the components of your analysis decides which targets are built and when.

Usage

```

deps_target(target, config = read_drake_config(),
  character_only = FALSE)

```

Arguments

target	a symbol denoting a target name, or if <code>character_only</code> is TRUE, a character scalar denoting a target name.
config	an output list from <code>drake_config()</code>
character_only	logical, whether to assume target is a character string rather than a symbol.

Value

Names of dependencies listed by type (object, input file, etc).

See Also

`deps_code`

Examples

```

## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan)
  deps_target("regression1_small", config = config)
  deps_target(c("small", "large"), config = config, reverse = TRUE)
})

```

```
  })
  ## End(Not run)
```

diagnose

Get diagnostic metadata on a target.

Description

Diagnostics include errors, warnings, messages, runtimes, and other context/metadata from when a target was built or an import was processed. If your target's last build succeeded, then `diagnose(your_target)` has the most current information from that build. But if your target failed, then only `diagnose(your_target)$error`, `diagnose(your_target)$warnings`, and `diagnose(your_target)$messages` correspond to the failure, and all the other metadata correspond to the last build that completed without an error.

Usage

```
diagnose(target = NULL, character_only = FALSE, path = getwd(),
  search = TRUE, cache = drake::get_cache(path = path, search = search,
  verbose = verbose), verbose = drake::default_verbose())
```

Arguments

target	name of the target of the error to get. Can be a symbol if <code>character_only</code> is FALSE, must be a character if <code>character_only</code> is TRUE.
character_only	logical, whether <code>target</code> should be treated as a character or a symbol. Just like <code>character.only</code> in <code>library()</code> .
path	Root directory of the drake project, or if <code>search</code> is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

Value

Either a character vector of target names or an object of class "error".

See Also

[failed\(\)](#), [progress\(\)](#), [readd\(\)](#), [drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  diagnose() # List all the targets with recorded error logs.
  # Define a function doomed to failure.
  f <- function(){
    stop("unusual error")
  }
  # Create a workflow plan doomed to failure.
  bad_plan <- drake_plan(my_target = f())
  # Running the project should generate an error
  # when trying to build 'my_target'.
  try(make(bad_plan), silent = FALSE)
  failed() # List the failed targets from the last make() (my_target).
  # List targets that failed at one point or another
  # over the course of the project (my_target).
  # Drake keeps all the error logs.
  diagnose()
  # Get the error log, an object of class "error".
  error <- diagnose(my_target)$error # See also warnings and messages.
  str(error) # See what's inside the error log.
  error$calls # View the traceback. (See the traceback() function).
  # Use purrr to recover all the warnings.
  suppressWarnings(
    make(
      drake_plan(
        x = 1,
        y = warning(123),
        z = warning(456)
      ),
      verbose = FALSE
    )
  )
  targets <- built(verbose = FALSE)
  lapply(targets, diagnose, character_only = TRUE, verbose = FALSE) %>%
    setNames(targets) %>%
    purrr::map("warnings") %>%
    purrr::compact() %>%
    unlist
})

## End(Not run)
```


Description

Also load the target's dependencies beforehand.

Usage

```
drake_build(target, config = drake::read_drake_config(envir = envir, jobs
  = jobs), meta = NULL, character_only = FALSE,
  envir = parent.frame(), jobs = 1, replace = FALSE)
```

Arguments

target	name of the target
config	internal configuration list
meta	list of metadata that tell which targets are up to date (from drake_meta()).
character_only	logical, whether name should be treated as a character or a symbol (just like <code>character.only</code> in library()).
envir	environment to load objects into. Defaults to the calling environment (current workspace).
jobs	number of parallel jobs for loading objects. On non-Windows systems, the loading process for multiple objects can be lightly parallelized via <code>parallel::mclapply()</code> . Just set jobs to be an integer greater than 1. On Windows, jobs is automatically demoted to 1.
replace	logical. If FALSE, items already in your environment will not be replaced.

Value

The value of the target right after it is built.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  # This example is not really a user-side demonstration.
  # It just walks through a dive into the internals.
  # Populate your workspace and write 'report.Rmd'.
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Create the master internal configuration list.
  config <- drake_config(my_plan)
  out <- drake_build(small, config = config)
  # Now includes `small`.
  cached()
  head(read(small))
  # `small` was invisibly returned.
  head(out)
  # If you previously called make(),
  # `config` is just read from the cache.
  make(my_plan, verbose = FALSE)
  result <- drake_build(small)
  head(result)
```

```

})

## End(Not run)

```

drake_cache_log	<i>Get a table that represents the state of the cache.</i>
-----------------	--

Description

This functionality is like `make(..., cache_log_file = TRUE)`, but separated and more customizable. Hopefully, this functionality is a step toward better data versioning tools.

Usage

```

drake_cache_log(path = getwd(), search = TRUE,
  cache = drake::get_cache(path = path, search = search, verbose =
  verbose), verbose = drake::default_verbose(), jobs = 1,
  targets_only = FALSE)

```

Arguments

path	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
jobs	number of jobs/workers for parallel processing
targets_only	logical, whether to output information only on the targets in your workflow plan data frame. If <code>targets_only</code> is <code>FALSE</code> , the output will include the hashes of both targets and imports.

Details

A hash is a fingerprint of an object's value. Together, the hash keys of all your targets and imports represent the state of your project. Use `drake_cache_log()` to generate a data frame with the hash keys of all the targets and imports stored in your cache. This function is particularly useful if you are storing your drake project in a version control repository. The cache has a lot of tiny files, so you should not put it under version control. Instead, save the output of `drake_cache_log()` as a text

file after each `make()`, and put the text file under version control. That way, you have a changelog of your project's results. See the examples below for details. Depending on your project's history, the targets may be different than the ones in your workflow plan data frame. Also, the keys depend on the short hash algorithm of your cache (default: `default_short_hash_algo()`).

Value

Data frame of the hash keys of the targets and imports in the cache

See Also

`drake_cache_log_file()` `cached()`, `get_cache()`, `default_short_hash_algo()`, `default_long_hash_algo()`, `short_hash()`, `long_hash()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  # Load drake's canonical example.
  load_mtcars_example() # Get the code with drake_example()
  # Run the project, build all the targets.
  make(my_plan)
  # Get a data frame of all the hash keys.
  # If you want a changelog, be sure to do this after every make().
  cache_log <- drake_cache_log()
  head(cache_log)
  # Save the hash log as a flat text file.
  write.table(
    x = cache_log,
    file = "drake_cache.log",
    quote = FALSE,
    row.names = FALSE
  )
  # At this point, put drake_cache.log under version control
  # (e.g. with 'git add drake_cache.log') alongside your code.
  # Now, every time you run your project, your commit history
  # of hash_log.txt is a changelog of the project's results.
  # It shows which targets and imports changed on every commit.
  # It is extremely difficult to track your results this way
  # by putting the raw '.drake/' cache itself under version control.
})

## End(Not run)
```

`drake_cache_log_file` *Generate a flat text log file to represent the state of the cache.*

Description

This functionality is like `make(..., cache_log_file = TRUE)`, but separated and more customizable. The `drake_cache_log_file()` function writes a flat text file to represent the state of all the targets and imports in the cache. If you call it after each `make()` and put the log file under version control, you can track the changes to your results over time. This way, your data is versioned alongside your code in a easy-to-view format. Hopefully, this functionality is a step toward better data versioning tools.

Usage

```
drake_cache_log_file(file = "drake_cache.log", path = getwd(),
  search = TRUE, cache = drake::get_cache(path = path, search = search,
  verbose = verbose), verbose = drake::default_verbose(), jobs = 1,
  targets_only = FALSE)
```

Arguments

<code>file</code>	character scalar, name of the flat text log file.
<code>path</code>	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
<code>search</code>	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
<code>cache</code>	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
<code>verbose</code>	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
<code>jobs</code>	number of jobs/workers for parallel processing
<code>targets_only</code>	logical, whether to output information only on the targets in your workflow plan data frame. If <code>targets_only</code> is <code>FALSE</code> , the output will include the hashes of both targets and imports.

Value

There is no return value, but a log file is generated.

See Also

`drake_cache_log()`, `make()`, `get_cache()`, `default_long_hash_algo()`, `short_hash()`, `long_hash()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  # Load drake's canonical example.
  load_mtcars_example() # Get the code with drake_example()
  # Run the project and save a flat text log file.
  make(my_plan)
  drake_cache_log_file() # writes drake_cache.log
  # The above 2 lines are equivalent to make(my_plan, cache_log_file = TRUE) # nolint
  # At this point, put drake_cache.log under version control
  # (e.g. with 'git add drake_cache.log') alongside your code.
  # Now, every time you run your project, your commit history
  # of hash_lot.txt is a changelog of the project's results.
  # It shows which targets and imports changed on every commit.
  # It is extremely difficult to track your results this way
  # by putting the raw '.drake/' cache itself under version control.
})

## End(Not run)
```

drake_config

Create the internal runtime parameter list used internally in `make()`.

Description

This configuration list is also required for functions such as `outdated()`. It is meant to be specific to a single call to `make()`, and you should not modify it by hand afterwards. If you later plan to call `make()` with different arguments (especially targets), you should refresh the config list with another call to `drake_config()`. For changes to the targets argument specifically, it is important to recompute the config list to make sure the internal workflow network has all the targets you need. Modifying the targets element afterwards will have no effect and it could lead to false negative results from `outdated()`

Usage

```
drake_config(plan = read_drake_plan(), targets = NULL,
  envir = parent.frame(), verbose = drake::default_verbose(),
  hook = default_hook, cache = drake::get_cache(verbose = verbose,
  force = force, console_log_file = console_log_file),
  fetch_cache = NULL, parallelism = drake::default_parallelism(),
  jobs = 1, packages = rev(.packages()), prework = character(0),
  prepend = character(0), command = drake::default_Makefile_command(),
  args = drake::default_Makefile_args(jobs = jobs, verbose = verbose),
  recipe_command = drake::default_recipe_command(), timeout = Inf,
  cpu = timeout, elapsed = timeout, retries = 0, force = FALSE,
  log_progress = FALSE, graph = NULL, trigger = drake::trigger(),
  skip_targets = FALSE, skip_imports = FALSE,
  skip_safety_checks = FALSE, lazy_load = "eager",
```

```

session_info = TRUE, cache_log_file = NULL, seed = NULL,
caching = c("worker", "master"), keep_going = FALSE,
session = NULL, imports_only = NULL,
pruning_strategy = c("lookahead", "speed", "memory"),
makefile_path = "Makefile", console_log_file = NULL,
ensure_workers = TRUE, garbage_collection = FALSE,
template = list()

```

Arguments

plan	workflow plan data frame. A workflow plan data frame is a data frame with a target column and a command column. (See the details in the drake_plan() help file for descriptions of the optional columns.) Targets are the objects and files that drake generates, and commands are the pieces of R code that produce them. Use the function drake_plan() to generate workflow plan data frames easily, and see functions plan_analyses() , plan_summaries() , evaluate_plan() , expand_plan() , and gather_plan() for easy ways to generate large workflow plan data frames.
targets	character vector, names of targets to build. Dependencies are built too. Together, the plan and targets comprise the workflow network (i.e. the graph argument). Changing either will change the network.
envir	environment to use. Defaults to the current workspace, so you should not need to worry about this most of the time. A deep copy of <code>envir</code> is made, so you don't need to worry about your workspace being modified by <code>make</code> . The deep copy inherits from the global environment. Wherever necessary, objects and functions are imported from <code>envir</code> and the global environment and then reproducibly tracked as dependencies.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2 : in addition, print checks and cache info. 3 : in addition, print any potentially missing items. 4 : in addition, print imports. Full verbosity.
hook	function with at least one argument. The hook is as a wrapper around the code that drake uses to build a target (see the body of <code>drake:::build_in_hook()</code>). Hooks can control the side effects of build behavior. For example, to redirect output and error messages to text files, you might use the built-in silencer_hook() , as in <code>make(my_plan, hook = silencer_hook)</code> . The silencer hook is useful for distributed parallelism, where the calling R process does not have control over all the error and output streams. See also output_sink_hook() and message_sink_hook() . For your own custom hooks, treat the first argument as the code that builds a target, and make sure this argument is actually evaluated. Otherwise, the code will not run and none of your targets will build. For example, <code>function(code){force(code)}</code> is a good hook and <code>function(code){message("Avoiding the c</code> is a bad hook.

cache	drake cache as created by <code>new_cache()</code> . See also <code>get_cache()</code> and <code>this_cache()</code> .
fetch_cache	character vector containing lines of code. The purpose of this code is to fetch the storrr cache with a command like <code>storr_rds()</code> or <code>storr_dbi()</code> , but customized. This feature is experimental. It will turn out to be necessary if you are using both custom non-RDS caches and distributed parallelism (<code>parallelism = "future_lapply"</code> or <code>"Makefile"</code>) because the distributed R sessions need to know how to load the cache.
parallelism	character, type of parallelism to use. To list the options, call <code>parallelism_choices()</code> . For detailed explanations, see the high-performance computing chapter # nolint of the user manual.
jobs	number of parallel processes or jobs to run. See <code>predict_runtime()</code> to help figure out what the number of jobs should be. Windows users should not set <code>jobs > 1</code> if <code>parallelism</code> is <code>"mclapply"</code> because <code>mclapply()</code> is based on forking. Windows users who use <code>parallelism = "Makefile"</code> will need to download and install Rtools. Imports and targets are processed separately, and they usually have different parallelism needs. To use at most 2 jobs at a time for imports and at most 4 jobs at a time for targets, call <code>make(..., jobs = c(imports = 2, targets = 4))</code> . If <code>parallelism</code> is <code>"Makefile"</code> , Makefile-level parallelism is only used for targets in your workflow plan data frame, not imports. To process imported objects and files, drake selects the best parallel backend for your system and uses the number of jobs you give to the <code>jobs</code> argument to <code>make()</code> . To use at most 2 jobs for imports and at most 4 jobs for targets, run <code>make(..., parallelism = "Makefile", jobs = c(imports = 2, targets = 4))</code> or <code>make(..., parallelism = "Makefile", jobs = 2, args = "--jobs=4")</code> .
packages	character vector packages to load, in the order they should be loaded. Defaults to <code>rev(.packages())</code> , so you should not usually need to set this manually. Just call <code>library()</code> to load your packages before <code>make()</code> . However, sometimes packages need to be strictly forced to load in a certain order, especially if <code>parallelism</code> is <code>"Makefile"</code> . To do this, do not use <code>library()</code> or <code>require()</code> or <code>loadNamespace()</code> or <code>attachNamespace()</code> to load any libraries beforehand. Just list your packages in the <code>packages</code> argument in the order you want them to be loaded. If <code>parallelism</code> is <code>"mclapply"</code> , the necessary packages are loaded once before any targets are built. If <code>parallelism</code> is <code>"Makefile"</code> , the necessary packages are loaded once on initialization and then once again for each target right before that target is built.
prework	character vector of lines of code to run before build time. This code can be used to load packages, set options, etc., although the packages in the <code>packages</code> argument are loaded before any prework is done. If <code>parallelism</code> is <code>"mclapply"</code> , the prework is run once before any targets are built. If <code>parallelism</code> is <code>"Makefile"</code> , the prework is run once on initialization and then once again for each target right before that target is built.
prepend	lines to prepend to the Makefile if <code>parallelism</code> is <code>"Makefile"</code> . See the high-performance computing guide # nolint to learn how to use <code>prepend</code> to take advantage of multiple nodes of a supercomputer.
command	character scalar, command to call the Makefile generated for distributed computing. Only applies when <code>parallelism</code> is <code>"Makefile"</code> . Defaults to the usual

"make" (`default_Makefile_command()`), but it could also be "lsmake" on supporting systems, for example. `command` and `args` are executed via `system2(command, args)` to run the Makefile. If `args` has something like "--jobs=2", or if `jobs >= 2` and `args` is left alone, targets will be distributed over independent parallel R sessions wherever possible.

<code>args</code>	command line arguments to call the Makefile for distributed computing. For advanced users only. If set, <code>jobs</code> and <code>verbose</code> are overwritten as they apply to the Makefile. <code>command</code> and <code>args</code> are executed via <code>system2(command, args)</code> to run the Makefile. If <code>args</code> has something like "--jobs=2", or if <code>jobs >= 2</code> and <code>args</code> is left alone, targets will be distributed over independent parallel R sessions wherever possible.
<code>recipe_command</code>	Character scalar, command for the Makefile recipe for each target.
<code>timeout</code>	Seconds of overall time to allow before imposing a timeout on a target. Passed to <code>R.utils::withTimeout()</code> . Assign target-level timeout times with an optional <code>timeout</code> column in <code>plan</code> .
<code>cpu</code>	Seconds of cpu time to allow before imposing a timeout on a target. Passed to <code>R.utils::withTimeout()</code> . Assign target-level cpu timeout times with an optional <code>cpu</code> column in <code>plan</code> .
<code>elapsed</code>	Seconds of elapsed time to allow before imposing a timeout on a target. Passed to <code>R.utils::withTimeout()</code> . Assign target-level elapsed timeout times with an optional <code>elapsed</code> column in <code>plan</code> .
<code>retries</code>	Number of retries to execute if the target fails. Assign target-level retries with an optional <code>retries</code> column in <code>plan</code> .
<code>force</code>	Force <code>make()</code> to build your targets even if some about your setup is not quite right: for example, if you are using a version of drake that is not back compatible with your project's cache.
<code>log_progress</code>	logical, whether to log the progress of individual targets as they are being built. Progress logging creates a lot of little files in the cache, and it may make builds a tiny bit slower. So you may see gains in storage efficiency and speed with <code>make(..., log_progress = FALSE)</code> . But be warned that <code>progress()</code> and <code>in_progress()</code> will no longer work if you do that.
<code>graph</code>	An <code>igraph</code> object from the previous <code>make()</code> . Supplying a pre-built graph could save time. The graph is constructed by <code>build_drake_graph()</code> . You can also get one from <code>drake_config(my_plan)\$graph</code> . Overrides <code>skip_imports</code> .
<code>trigger</code>	Name of the trigger to apply to all targets. Ignored if <code>plan</code> has a <code>trigger</code> column. See <code>trigger()</code> for details.
<code>skip_targets</code>	logical, whether to skip building the targets in <code>plan</code> and just import objects and files.
<code>skip_imports</code>	logical, whether to totally neglect to process the imports and jump straight to the targets. This can be useful if your imports are massive and you just want to test your project, but it is bad practice for reproducible data analysis. This argument is overridden if you supply your own <code>graph</code> argument.
<code>skip_safety_checks</code>	logical, whether to skip the safety checks on your workflow. Use at your own peril.

lazy_load	<p>either a character vector or a logical. Choices:</p> <ul style="list-style-type: none"> • "eager": no lazy loading. The target is loaded right away with <code>assign()</code>. • "promise": lazy loading with <code>delayedAssign()</code> • "bind": lazy loading with active bindings: <code>bindr::populate_env()</code>. • TRUE: same as "promise". • FALSE: same as "eager". <p>lazy_load should not be "promise" for "parLapply" parallelism combined with jobs greater than 1. For local multi-session parallelism and lazy loading, try <code>library(future); future::plan(multisession)</code> and then <code>make(..., parallelism = "future")</code>. If lazy_load is "eager", drake prunes the execution environment before each target/stage, removing all superfluous targets and then loading any dependencies it will need for building. In other words, drake prepares the environment in advance and tries to be memory efficient. If lazy_load is "bind" or "promise", drake assigns promises to load any dependencies at the last minute. Lazy loading may be more memory efficient in some use cases, but it may duplicate the loading of dependencies, costing time.</p>
session_info	<p>logical, whether to save the <code>sessionInfo()</code> to the cache. This behavior is recommended for serious <code>make()</code>s for the sake of reproducibility. This argument only exists to speed up tests. Apparently, <code>sessionInfo()</code> is a bottleneck for small <code>make()</code>s.</p>
cache_log_file	<p>Name of the cache log file to write. If TRUE, the default file name is used (<code>drake_cache.log</code>). If NULL, no file is written. If activated, this option uses <code>drake_cache_log_file()</code> to write a flat text file to represent the state of the cache (fingerprints of all the targets and imports). If you put the log file under version control, your commit history will give you an easy representation of how your results change over time as the rest of your project changes. Hopefully, this is a step in the right direction for data reproducibility.</p>
seed	<p>integer, the root pseudo-random seed to use for your project. To ensure reproducibility across different R sessions, <code>set.seed()</code> and <code>.Random.seed</code> are ignored and have no affect on drake workflows. Conversely, <code>make()</code> does not change <code>.Random.seed</code>, even when pseudo-random numbers are generated.</p> <p>On the first call to <code>make()</code> or <code>drake_config()</code>, drake uses the random number generator seed from the seed argument. Here, if the seed is NULL (default), drake uses a seed of 0. On subsequent <code>make()</code>s for existing projects, the project's cached seed will be used in order to ensure reproducibility. Thus, the seed argument must either be NULL or the same seed from the project's cache (usually the <code>.drake/</code> folder). To reset the random number generator seed for a project, use <code>clean(destroy = TRUE)</code>.</p>
caching	<p>character string, only applies to "future" parallelism. Can be either "master" or "worker".</p> <ul style="list-style-type: none"> • "master": Targets are built by remote workers and sent back to the master process. Then, the master process saves them to the cache (<code>config\$cache</code>, usually a file system <code>storr</code>). Appropriate if remote workers do not have access to the file system of the calling R session. Targets are cached one at a time, which may be slow in some situations.

	<ul style="list-style-type: none"> • "worker": Remote workers not only build the targets, but also save them to the cache. Here, caching happens in parallel. However, remote workers need to have access to the file system of the calling R session. Transferring target data across a network can be slow.
keep_going	logical, whether to still keep running <code>make()</code> if targets fail.
session	An optional <code>callr</code> function if you want to build all your targets in a separate master session: for example, <code>make(plan = my_plan, session = callr::r_vanilla)</code> . Running <code>make()</code> in a clean, isolated session can enhance reproducibility. But be warned: if you do this, <code>make()</code> will take longer to start. If <code>session</code> is <code>NULL</code> (default), then <code>make()</code> will just use your current R session as the master session. This is slightly faster, but it causes <code>make()</code> to populate your workspace/environment with the last few targets it builds.
imports_only	deprecated. Use <code>skip_targets</code> instead.
pruning_strategy	Character scalar, name of the approach that drake takes regarding when to unload targets from memory. Choices: <ul style="list-style-type: none"> • "lookahead" (default): keep loaded targets in memory until they are no longer needed as dependencies in downstream build steps. Then, unload them from the environment. This step avoids keeping unneeded data in memory and minimizes expensive reads from the cache. However, it requires looking ahead in the dependency graph, which could add overhead for every target of projects with lots of targets. • "speed": Once a target is loaded in memory, just keep it there. Maximizes speed, but hogs memory. • "memory": For each target, unload everything from memory except the target's direct dependencies. Conserves memory, but sacrifices speed because each new target needs to reload any previously unloaded targets from the cache.
makefile_path	Path to the Makefile for <code>make(parallelism = "Makefile")</code> . If you set this argument to a non-default value, you are responsible for supplying this same path to the <code>args</code> argument so <code>make</code> knows where to find it. Example: <code>make(parallelism = "Makefile", makefile_path = ".drake/.makefile", command = "make", a # nolint</code>
console_log_file	character scalar or <code>NULL</code> . If <code>NULL</code> , console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.
ensure_workers	logical, whether the master process should wait for the workers to post before assigning them targets. Should usually be <code>TRUE</code> . Set to <code>FALSE</code> for <code>make(parallelism = "future_lapply", (n > 1)</code> when combined with <code>future::plan(future::sequential)</code> . This argument only applies to parallel computing with persistent workers (<code>make(parallelism = x)</code> , where <code>x</code> could be <code>"mclapply"</code> , <code>"parLapply"</code> , or <code>"future_lapply"</code>).
garbage_collection	logical, whether to call <code>gc()</code> each time a target is built during <code>make()</code> .
template	a named list of values to fill in the <code>{{ ... }}</code> placeholders in template files (e.g. from <code>drake_hpc_template_file()</code>). Same as the <code>template</code> argument

of `clustermq::Q()` and `clustermq::workers`. Enabled for `clustermq` only (`make(parallelism = "clustermq_staged")`), not `future` or `batchtools` so far. For more information, see the `clustermq` package: <https://github.com/mschubert/clustermq>. Some template placeholders such as `{{ job_name }}` and `{{ n_jobs }}` cannot be set this way.

Value

The master internal configuration list of a project.

See Also

[make\(\)](#), [drake_plan\(\)](#), [vis_drake_graph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Construct the master internal configuration list.
  config <- drake_config(my_plan)
  vis_drake_graph(config) # See the dependency graph.
  sankey_drake_graph(config) # See the dependency graph.
  # These functions are faster than otherwise
  # because they use the configuration list.
  outdated(config) # Which targets are out of date?
  missed(config) # Which imports are missing?
})

## End(Not run)
```

drake_example	<i>Download and save the code and data files of an example drake-powered project.</i>
---------------	---

Description

The `drake_example()` function downloads a folder from <https://github.com/wlandau/drake-examples>. (Really, it downloads one of the zip files listed at <https://github.com/wlandau/drake-examples/tree/gh-pages> and unzips it. Do not include the `.zip` extension in the example argument.)

Usage

```
drake_example(example = "main", to = getwd(), destination = NULL,
  overwrite = FALSE, quiet = TRUE)
```

Arguments

example	name of the example. The possible values are the names of the folders at https://github.com/wlandau/drake-examples .
to	Character scalar, the folder containing the code files for the example. passed to the exdir argument of <code>utils::unzip()</code> .
destination	Deprecated, use to instead.
overwrite	Logical, whether to overwrite an existing folder with the same name as the drake example.
quiet	logical, passed to <code>downloader::download()</code> and thus <code>utils::download.file()</code> . Whether to download quietly or print progress.

Value

NULL

See Also

[drake_examples\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  drake_examples() # List all the drake examples.
  # Sets up the same example as https://ropenscilabs.github.io/drake-manual/mtcars.html # nolint
  drake_example("mtcars")
  # Sets up the SLURM example.
  drake_example("slurm")
})

## End(Not run)
```

drake_examples	<i>List the names of all the drake examples.</i>
----------------	--

Description

You can find the code files of the examples at <https://github.com/wlandau/drake-examples>. The `drake_examples()` function downloads the list of examples from <https://wlandau.github.io/drake-examples/examples.md>, so you need an internet connection.

Usage

```
drake_examples(quiet = TRUE)
```

Arguments

`quiet` logical, passed to `downloader::download()` and thus `utils::download.file()`. Whether to download quietly or print progress.

Value

Names of all the drake examples.

See Also

[drake_example\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  drake_examples() # List all the drake examples.
  # Sets up the example from
  # https://ropenscilabs.github.io/drake-manual/mtcars.html
  drake_example("mtcars")
  # Sets up the SLURM example.
  drake_example("slurm")
})

## End(Not run)
```

drake_gc

Do garbage collection on the drake cache.

Description

The cache is a key-value store. By default, the [clean\(\)](#) function removes values, but not keys. Garbage collection removes the remaining dangling files.

Usage

```
drake_gc(path = getwd(), search = TRUE,
         verbose = drake::default_verbose(), cache = NULL, force = FALSE)
```

Arguments

`path` Root directory of the drake project, or if `search` is `TRUE`, either the project root or a subdirectory of the project. Ignored if a cache is supplied.

`search` logical. If `TRUE`, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.

`verbose` logical or numeric, control printing to the console. Use `pkgconfig` to set the default value of `verbose` for your R session: for example, `pkgconfig::set_config("drake::verbose" =`

	0 or FALSE: print nothing.
	1 or TRUE: print only targets to build.
	2: in addition, print checks and cache info.
	3: in addition, print any potentially missing items.
	4: in addition, print imports. Full verbosity.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
force	logical, whether to load the cache despite any back compatibility issues with the running version of drake.

Value

NULL

See Also[clean\(\)](#)**Examples**

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  # At this point, check the size of the '.drake/' cache folder.
  # Clean without garbage collection.
  clean(garbage_collection = FALSE)
  # The '.drake/' cache folder is still about the same size.
  drake_gc() # Do garbage collection on the cache.
  # The '.drake/' cache folder should have gotten much smaller.
})

## End(Not run)
```

drake_ggraph

*Show a ggraph/ggplot2 representation of your drake project.***Description**

This function requires packages `ggplot2` and `ggraph`. Install them with `install.packages(c("ggplot2", "ggraph"))`.

Usage

```
drake_ggraph(config = drake::read_drake_config(),
  build_times = "build", digits = 3, targets_only = FALSE,
  split_columns = NULL, main = NULL, from = NULL, mode = c("out",
  "in", "all"), order = NULL, subset = NULL, make_imports = TRUE,
  from_scratch = FALSE, full_legend = FALSE, group = NULL,
  clusters = NULL, show_output_files = TRUE)
```

Arguments

config	a <code>drake_config()</code> configuration list. You can get one as a return value from <code>make()</code> as well.
build_times	character string or logical. If character, the choices are 1. "build": runtime of the command plus the time it take to store the target or import. 2. "command": just the runtime of the command. 3. "none": no build times. If logical, <code>build_times</code> selects whether to show the times from <code>'build_times(..., type = "build")'</code> or use no build times at all. See <code>build_times()</code> for details.
digits	number of digits for rounding the build times
targets_only	logical, whether to skip the imports and only include the targets in the workflow plan.
split_columns	logical, deprecated.
main	character string, title of the graph
from	Optional collection of target/import names. If <code>from</code> is nonempty, the graph will restrict itself to a neighborhood of <code>from</code> . Control the neighborhood with <code>mode</code> and <code>order</code> .
mode	Which direction to branch out in the graph to create a neighborhood around <code>from</code> . Use "in" to go upstream, "out" to go downstream, and "all" to go both ways and disregard edge direction altogether.
order	How far to branch out to create a neighborhood around <code>from</code> . Defaults to as far as possible. If a target is in the neighborhood, then so are all of its custom <code>file_out()</code> files if <code>show_output_files</code> is TRUE. That means the actual graph order may be slightly greater than you might expect, but this ensures consistency between <code>show_output_files = TRUE</code> and <code>show_output_files = FALSE</code> .
subset	Optional character vector. Subset of targets/imports to display in the graph. Applied after <code>from</code> , <code>mode</code> , and <code>order</code> . Be advised: edges are only kept for adjacent nodes in <code>subset</code> . If you do not select all the intermediate nodes, edges will drop from the graph.
make_imports	logical, whether to make the imports first. Set to FALSE to increase speed and risk using obsolete information.
from_scratch	logical, whether to assume all the targets will be made from scratch on the next <code>make()</code> . Makes all targets outdated, but keeps information about build progress in previous <code>make()</code> s.
full_legend	logical. If TRUE, all the node types are printed in the legend. If FALSE, only the node types used are printed in the legend.
group	optional character scalar, name of the column used to group nodes into columns. All the columns names of your <code>config\$plan</code> are choices. The other choices (such as "status") are column names in the nodes . To group nodes into clusters in the graph, you must also supply the <code>clusters</code> argument.
clusters	optional character vector of values to cluster on. These values must be elements of the column of the nodes data frame that you specify in the <code>group</code> argument to <code>drake_graph_info()</code> .
show_output_files	logical, whether to include <code>file_out()</code> files in the graph.

Value

A ggplot2 object, which you can modify with more layers, show with `plot()`, or save as a file with `ggsave()`.

See Also

[vis_drake_graph\(\)](#), [sankey_drake_graph\(\)](#), [render_drake_ggraph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan)
  # Plot the network graph representation of the workflow.
  drake_ggraph(config) # Save to a file with `ggplot2::ggsave()`.
})

## End(Not run)
```

drake_graph_info	<i>Create the underlying node and edge data frames behind vis_drake_graph().</i>
------------------	--

Description

With the returned data frames, you can plot your own custom `visNetwork` graph.

Usage

```
drake_graph_info(config = drake::read_drake_config(), from = NULL,
  mode = c("out", "in", "all"), order = NULL, subset = NULL,
  build_times = "build", digits = 3, targets_only = FALSE,
  split_columns = NULL, font_size = 20, from_scratch = FALSE,
  make_imports = TRUE, full_legend = FALSE, group = NULL,
  clusters = NULL, show_output_files = TRUE)
```

Arguments

config	a drake_config() configuration list. You can get one as a return value from make() as well.
from	Optional collection of target/import names. If from is nonempty, the graph will restrict itself to a neighborhood of from. Control the neighborhood with mode and order.
mode	Which direction to branch out in the graph to create a neighborhood around from. Use "in" to go upstream, "out" to go downstream, and "all" to go both ways and disregard edge direction altogether.

order	How far to branch out to create a neighborhood around from. Defaults to as far as possible. If a target is in the neighborhood, then so are all of its custom <code>file_out()</code> files if <code>show_output_files</code> is TRUE. That means the actual graph order may be slightly greater than you might expect, but this ensures consistency between <code>show_output_files = TRUE</code> and <code>show_output_files = FALSE</code> .
subset	Optional character vector. Subset of targets/imports to display in the graph. Applied after <code>from</code> , <code>mode</code> , and <code>order</code> . Be advised: edges are only kept for adjacent nodes in <code>subset</code> . If you do not select all the intermediate nodes, edges will drop from the graph.
build_times	character string or logical. If character, the choices are 1. "build": runtime of the command plus the time it take to store the target or import. 2. "command": just the runtime of the command. 3. "none": no build times. If logical, <code>build_times</code> selects whether to show the times from 'build_times(..., type = "build")' or use no build times at all. See <code>build_times()</code> for details.
digits	number of digits for rounding the build times
targets_only	logical, whether to skip the imports and only include the targets in the workflow plan.
split_columns	logical, deprecated.
font_size	numeric, font size of the node labels in the graph
from_scratch	logical, whether to assume all the targets will be made from scratch on the next <code>make()</code> . Makes all targets outdated, but keeps information about build progress in previous <code>make()</code> s.
make_imports	logical, whether to make the imports first. Set to FALSE to increase speed and risk using obsolete information.
full_legend	logical. If TRUE, all the node types are printed in the legend. If FALSE, only the node types used are printed in the legend.
group	optional character scalar, name of the column used to group nodes into columns. All the columns names of your <code>config\$plan</code> are choices. The other choices (such as "status") are column names in the nodes . To group nodes into clusters in the graph, you must also supply the <code>clusters</code> argument.
clusters	optional character vector of values to cluster on. These values must be elements of the column of the nodes data frame that you specify in the <code>group</code> argument to <code>drake_graph_info()</code> .
show_output_files	logical, whether to include <code>file_out()</code> files in the graph.

Value

A list of three data frames: one for nodes, one for edges, and one for the legend nodes. The list also contains the default title of the graph.

See Also

`vis_drake_graph()`, `build_drake_graph()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan) # my_plan loaded with load_mtcars_example()
  vis_drake_graph(config) # Jump straight to the interactive graph.
  # Get a list of data frames representing the nodes, edges,
  # and legend nodes of the visNetwork graph from vis_drake_graph().
  raw_graph <- drake_graph_info(config = config)
  # Choose a subset of the graph.
  smaller_raw_graph <- drake_graph_info(
    config = config,
    from = c("small", "reg2"),
    mode = "in"
  )
  # Inspect the raw graph.
  str(raw_graph)
  # Use the data frames to plot your own custom visNetwork graph.
  # For example, you can omit the legend nodes
  # and change the direction of the graph.
  library(magrittr)
  library(visNetwork)
  visNetwork(nodes = raw_graph$nodes, edges = raw_graph$edges) %>%
    visHierarchicalLayout(direction = 'UD')
  # Optionally visualize clusters.
  config$plan$large_data <- grepl("large", config$plan$target)
  graph <- drake_graph_info(
    config, group = "large_data", clusters = c(TRUE, FALSE))
  tail(graph$nodes)
  render_drake_graph(graph)
  # You can even use clusters given to you for free in the `graph$nodes`
  # data frame.
  graph <- drake_graph_info(
    config, group = "status", clusters = "imported")
  tail(graph$nodes)
  render_drake_graph(graph)
})

## End(Not run)
```

drake_hpc_template_file

Write a template file for deploying work to a cluster / job scheduler.

Description

See the example files from [drake_examples\(\)](#) and [drake_example\(\)](#) for example usage.

Usage

```
drake_hpc_template_file(file = drake::drake_hpc_template_files(),
  to = getwd(), overwrite = FALSE)
```

Arguments

file	Name of the template file, including the "tmpl" extension.
to	Character vector, where to write the file.
overwrite	Logical, whether to overwrite an existing file of the same name.

Value

NULL is returned, but a batchtools template file is written.

See Also

[drake_hpc_template_files\(\)](#), [drake_examples\(\)](#), [drake_example\(\)](#), [shell_file\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # List the available template files.
  drake_hpc_template_files()
  # Write a SLURM template file from the SLURM example.
  drake_hpc_template_file("slurm_batchtools.tmpl") # Writes slurm_batchtools.tmpl.
  library(future.batchtools)
  # future::plan(batchtools_slurm, template = "slurm_batchtools.tmpl") # nolint
  # make(my_plan, parallelism = "future", jobs = 2) # nolint
})

## End(Not run)
```

drake_hpc_template_files

List the available example template files for deploying work to a cluster / job scheduler.

Description

See the example files from [drake_examples\(\)](#) and [drake_example\(\)](#) for example usage.

Usage

```
drake_hpc_template_files()
```

Value

a character vector of example template files that you can write with `drake_hpc_template_file()`.

See Also

`drake_hpc_template_file()`, `drake_examples()`, `drake_example()`, `shell_file()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # List the available template files.
  drake_hpc_template_files()
  # Write a SLURM template file from the SLURM example.
  drake_hpc_template_file("slurm_batchtools.tpl") # Writes slurm_batchtools.tpl.
  library(future.batchtools)
  # future::plan(batchtools_slurm, template = "slurm_batchtools.tpl") # nolint
  # make(my_plan, parallelism = "future", jobs = 2) # nolint
})

## End(Not run)
```

drake_meta

Compute the initial pre-build metadata of a target or import.

Description

The metadata helps determine if the target is up to date or outdated. The metadata of imports is used to compute the metadata of targets.

Usage

```
drake_meta(target, config = drake::read_drake_config())
```

Arguments

target	Character scalar, name of the target to get metadata.
config	Master internal configuration list produced by <code>drake_config()</code> .

Details

Target metadata is computed with `drake_meta()`, and then `drake::store_outputs()` completes the metadata after the target is built. In other words, the output of `drake_meta()` corresponds to the state of the target immediately before `make()` builds it. See `diagnose()` to read the final metadata of a target, including any errors, warnings, and messages in the last build.

Value

A list of metadata on a target. Does not include the file modification time if the target is a file. That piece is computed later in `make()` by `drake:::store_outputs()`.

See Also

`diagnose()`, `dependency_profile()`, `make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  # This example is not really a user-side demonstration.
  # It just walks through a dive into the internals.
  # Populate your workspace and write 'report.Rmd'.
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Create the master internal configuration list.
  config <- drake_config(my_plan)
  # Optionally, compute metadata on 'small',
  # including a hash/fingerprint
  # of the dependencies. If meta is not supplied,
  # drake_build() computes it automatically.
  meta <- drake_meta(target = "small", config = config)
  # Should not yet include 'small'.
  cached()
  # Build 'small'.
  # Equivalent to just drake_build(target = "small", config = config).
  drake_build(target = "small", config = config, meta = meta)
  # Should now include 'small'
  cached()
  readd(small)
})

## End(Not run)
```

drake_palette

Show drake's color palette.

Description

This function is used in both the console and graph visualizations. Your console must have the crayon package enabled.

Usage

```
drake_palette()
```

Details

This palette applies to console output (internal functions `console()` and `console_many_targets()`) and the node colors in the graph visualizations. So if you want to contribute improvements to the palette, please both `drake_palette()` and `visNetwork::visNetwork(nodes = legend_nodes())`

Value

There is a console message, but the actual return value is `NULL`.

Examples

```
# Show drake's color palette as text.
drake_palette()
# Show part of the palette as an interactive visNetwork graph.
# These are the nodes in the legend of the graph visualizations.
## Not run:
# visNetwork::visNetwork(nodes = legend_nodes()) # nolint

## End(Not run)
```

drake_plan

Create a workflow plan data frame for the `plan` argument of `make()`.

Description

Turns a named collection of target/command pairs into a workflow plan data frame for `make()`. You can give the commands as named expressions, or you can use the `list` argument to supply them as character strings.

Usage

```
drake_plan(..., list = character(0), file_targets = NULL,
  strings_in_dots = pkgconfig::get_config("drake::strings_in_dots"),
  tidy_evaluation = TRUE)
```

Arguments

<code>...</code>	A collection of symbols/targets with commands assigned to them. See the examples for details.
<code>list</code>	A named character vector of commands with names as targets.
<code>file_targets</code>	deprecated argument. See <code>file_out()</code> , <code>file_in()</code> , and <code>knitr_in()</code> for the current way to work with files. In the past, this argument was a logical to indicate whether the target names should be single-quoted to denote files. But the newer interface is much better.

`strings_in_dots`

deprecated argument for handling strings in commands specified in the `...` argument. Defaults to `NULL` for backward compatibility. New code should use `file_out()`, `file_in()`, and `knitr_in()` to specify file names and set this argument to `"literals"`, which will at some point become the only accepted value.

To fully embrace the glorious new file API, call `pkgconfig::set_config("drake::strings_in_dots"` right when you start your R session. That way, drake totally relies on `file_in()`, `file_out()`, and `knitr_in()` to coordinate input and output files, as opposed to deprecated features like single-quotes (and in the case of knitr reports, explicit calls to `knitr::knit()` and `rmarkdown::render()` in commands). This is why the default value of `strings_in_dots` is `pkgconfig::get_config("drake::strings_in_dots")`.

In the past, this argument was a character scalar denoting how to treat quoted character strings in the commands specified through `...`. Set to `"filenames"` to treat all these strings as external file targets/imports (single-quoted), or to `"literals"` to treat them all as literal strings (double-quoted). Unfortunately, because of how R deparses code, you cannot simply leave literal quotes alone in the `...` argument. R will either convert all these quotes to single quotes or double quotes. Literal quotes in the `list` argument are left alone.

`tidy_evaluation`

logical, whether to use tidy evaluation such as quasiquotation when evaluating commands passed through the free-form `...` argument.

Details

A workflow plan data frame is a data frame with a `target` column and a `command` column. Targets are the R objects that drake generates, and commands are the pieces of R code that produce them.

The commands that return targets may also depend on external files and create multiple external files. To signal that you are creating and/or depending on custom files in your commands, use the `file_in()`, `knitr_in()`, and `file_out()` functions in your commands. The examples in this help file provide some guidance.

Besides the `target` and `command` columns, there are optional columns you may append to your workflow plan data frame:

- `trigger`: a character vector of triggers. A trigger is a rule for when to cause a target to (re)build. See `triggers()` for your options. For a walkthrough, see <https://ropenscilabs.github.io/drake-manual/debug.html>
- `retries`: number of times to retry a target if it fails to build the first time.
- `timeout`: Seconds of overall time to allow before imposing a timeout on a target. Passed to `R.utils::withTimeout()`. Assign target-level timeout times with an optional `timeout` column in plan.
- `cpu`: Seconds of cpu time to allow before imposing a timeout on a target. Passed to `R.utils::withTimeout()`. Assign target-level cpu timeout times with an optional `cpu` column in plan.
- `elapsed`: Seconds of elapsed time to allow before imposing a timeout on a target. Passed to `R.utils::withTimeout()`. Assign target-level elapsed timeout times with an optional `elapsed` column in plan.
- `evaluator`: An experimental column. Each entry is a function passed to the evaluator argument of `future::future()` for each worker in `make(..., parallelism = "future")`.

Value

A data frame of targets and commands. See the details for optional columns you can append manually post-hoc.

Examples

```
test_with_dir("Contain side effects", {
# Create workflow plan data frames.
mtcars_plan <- drake_plan(
  write.csv(mtcars[, c("mpg", "cyl")], file_out("mtcars.csv")),
  value = read.csv(file_in("mtcars.csv")),
  strings_in_dots = "literals"
)
mtcars_plan
make(mtcars_plan) # Makes `mtcars.csv` and then `value`
head(readd(value))
# You can use knitr inputs too. See the top command below.
load_mtcars_example()
head(my_plan)
# The `knitr_in("report.Rmd")` tells `drake` to dive into the active
# code chunks to find dependencies.
# There, `drake` sees that `small`, `large`, and `coef_regression2_small`
# are loaded in with calls to `load()` and `readd()`.
deps_code("report.Rmd")
# You can create your own custom columns too.
# See ?triggers for more on triggers.
drake_plan(
  website_data = target(
    command = download_data("www.your_url.com"),
    trigger = "always",
    custom_column = 5
  ),
  analysis = analyze(website_data),
  strings_in_dots = "literals"
)
# Are you a fan of tidy evaluation?
my_variable <- 1
drake_plan(
  a = !!my_variable,
  b = !!my_variable + 1,
  list = c(d = "!!my_variable")
)
drake_plan(
  a = !!my_variable,
  b = !!my_variable + 1,
  list = c(d = "!!my_variable"),
  tidy_evaluation = FALSE
)
# For instances of !! that remain unevaluated in the workflow plan,
# make() will run these commands in tidy fashion,
# evaluating the !! operator using the environment you provided.
})
```

drake_plan_source *Show the code required to produce a given workflow plan data frame*

Description

You supply a plan, and `drake_plan_source()` supplies code to generate that plan. If you have the `prettycode` package, installed, you also get nice syntax highlighting in the console when you print it.

Usage

```
drake_plan_source(plan)
```

Arguments

`plan` a workflow plan data frame (see `drake_plan()`)

Value

a character vector of lines of text. This text is a call to `drake_plan()` that produces the plan you provide.

See Also

[drake_plan\(\)](#)

Examples

```
plan <- drake::drake_plan(
  small_data = download_data("https://some_website.com") %>%
    select_my_columns() %>%
    munge(),
  large_data_raw = target(
    command = download_data("https://lots_of_data.com") %>%
      select_top_columns,
    trigger = trigger(
      change = time_last_modified("https://lots_of_data.com"),
      command = FALSE,
      depend = FALSE
    ),
    timeout = 1e3
  )
)
print(plan)
source <- drake_plan_source(plan)
print(source) # Install the prettycode package for syntax highlighting.
## Not run:
test_with_dir("suppress side effects", {
  writeLines(source, "my_script.R") # Save the code to an R script.
```

```
})  
## End(Not run)
```

drake_quotes

Put quotes around each element of a character vector.

Description

Quotes are important in drake. In workflow plan data frame commands, single-quoted targets denote physical files, and double-quoted strings are treated as ordinary string literals.

Usage

```
drake_quotes(x = NULL, single = FALSE)
```

Arguments

`x` character vector or object to be coerced to character.
`single` Add single quotes if TRUE and double quotes otherwise.

Value

character vector with quotes around it

See Also

[drake_unquote\(\)](#), [drake_strings\(\)](#)

Examples

```
# Single-quote this string.  
drake_quotes("abcd", single = TRUE) # "'abcd'"  
# Double-quote this string.  
drake_quotes("abcd") # "\"abcd\""
```

drake_session *Return the `sessionInfo()` of the last call to `make()`.*

Description

By default, session info is saved during `make()` to ensure reproducibility. Your loaded packages and their versions are recorded, for example.

Usage

```
drake_session(path = getwd(), search = TRUE,
              cache = drake::get_cache(path = path, search = search, verbose =
              verbose), verbose = drake::default_verbose())
```

Arguments

path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See <code>new_cache()</code> . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

Value

`sessionInfo()` of the last call to `make()`

See Also

`diagnose()`, `built()`, `imported()`, `readd()`, `drake_plan()`, `make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  drake_session() # Retrieve the cached sessionInfo() of the last make().
})

## End(Not run)
```

drake_strings	<i>Turn valid expressions into character strings.</i>
---------------	---

Description

This function may be useful for constructing workflow plan data frames.

Usage

```
drake_strings(...)
```

Arguments

... unquoted symbols to turn into character strings.

Value

a character vector

See Also

[drake_quotes\(\)](#), [drake_unquote\(\)](#)

Examples

```
# Turn symbols into strings.  
drake_strings(a, b, c, d) # [1] "a" "b" "c" "d"
```

drake_tip	<i>Output a random tip about drake.</i>
-----------	---

Description

Tips are usually related to news and usage.

Usage

```
drake_tip()
```

Value

A character scalar with a tip on how to use drake.

Examples

```
drake_tip() # Show a tip about using drake.  
message(drake_tip()) # Print out a tip as a message.
```

drake_unquote	<i>Remove leading and trailing escaped quotes from character strings.</i>
---------------	---

Description

Quotes are important in drake. In workflow plan data frame commands, single-quoted targets denote physical files, and double-quoted strings are treated as ordinary string literals.

Usage

```
drake_unquote(x = NULL, deep = FALSE)
```

Arguments

x	character vector
deep	deprecated logical.

Value

character vector without leading or trailing escaped quotes around the elements

See Also

[drake_quotes\(\)](#), [drake_strings\(\)](#)

Examples

```
x <- "'abcd'"
# Remove the literal quotes around x.
drake_unquote(x) # "abcd"
```

empty_hook	<i>A hook argument to make() for which no targets get built and no imports get processed.</i>
------------	---

Description

This hook forces [make\(\)](#) to essentially do nothing.

Usage

```
empty_hook(code)
```

Arguments

code	Placeholder for the code to build a target/import. For <code>empty_hook()</code> , this code does not actually get executed.
------	--

Value

A function that you can supply to the hook argument of `make()`.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Run the project with the empty hook.
  make(my_plan, hook = empty_hook) # Nothing gets built!
  cached() # character(0) # nolint
})

## End(Not run)
```

evaluate_plan	<i>Use wildcard templating to create a workflow plan data frame from a template data frame.</i>
---------------	---

Description

The commands in workflow plan data frames can have wildcard symbols that can stand for datasets, parameters, function arguments, etc. These wildcards can be evaluated over a set of possible values using `evaluate_plan`.

Usage

```
evaluate_plan(plan, rules = NULL, wildcard = NULL, values = NULL,
  expand = TRUE, rename = expand, trace = FALSE,
  columns = "command")
```

Arguments

plan	workflow plan data frame, similar to one produced by <code>drake_plan()</code>
rules	Named list with wildcards as names and vectors of replacements as values. This is a way to evaluate multiple wildcards at once. When not <code>NULL</code> , <code>rules</code> overrules <code>wildcard</code> and <code>values</code> if not <code>NULL</code> .
wildcard	character scalar denoting a wildcard placeholder
values	vector of values to replace the wildcard in the drake instructions. Will be treated as a character vector. Must be the same length as <code>plan\$command</code> if <code>expand</code> is <code>TRUE</code> .
expand	If <code>TRUE</code> , create a new rows in the workflow plan data frame if multiple values are assigned to a single wildcard. If <code>FALSE</code> , each occurrence of the wildcard is replaced with the next entry in the <code>values</code> vector, and the values are recycled.
rename	logical, whether to rename the targets based on the values supplied for the wildcards (based on values or rules).

trace	logical, whether to add columns that trace the wildcard expansion process. These new columns indicate which targets were evaluated and with which wildcards.
columns	character vector of names of columns to look for and evaluate the wildcards.

Details

Specify a single wildcard with the wildcard and values arguments. In each command, the text in wildcard will be replaced by each value in values in turn. Specify multiple wildcards with the rules argument, which overrules wildcard and values if not NULL. Here, rules should be a list with wildcards as names and vectors of possible values as list elements.

Value

A workflow plan data frame with the wildcards evaluated.

Examples

```
# Create the part of the workflow plan for the datasets.
datasets <- drake_plan(
  small = simulate(5),
  large = simulate(50))
# Create a template workflow plan for the analyses.
methods <- drake_plan(
  regression1 = reg1(dataset__),
  regression2 = reg2(dataset__))
# Evaluate the wildcards in the template
# to produce the actual part of the workflow plan
# that encodes the analyses of the datasets.
# Create one analysis for each combination of dataset and method.
evaluate_plan(methods, wildcard = "dataset__",
  values = datasets$target)
# Only choose some combinations of dataset and analysis method.
ans <- evaluate_plan(methods, wildcard = "dataset__",
  values = datasets$target, expand = FALSE)
ans
# For the complete workflow plan, row bind the pieces together.
my_plan <- rbind(datasets, ans)
my_plan
# Workflow plans can have multiple wildcards.
# Each combination of wildcard values will be used
# Except when expand is FALSE.
x <- drake_plan(draws = rnorm(mean = Mean, sd = Sd))
evaluate_plan(x, rules = list(Mean = 1:3, Sd = c(1, 10)))
# You can use wildcards on columns other than "command"
evaluate_plan(
  drake_plan(
    x = target("always", cpu = "any"),
    y = target("any", cpu = "always"),
    z = target("any", cpu = "any"),
    strings_in_dots = "literals"
  ),
  rules = list(always = 1:2),
```

```

  columns = c("command", "cpu")
)
# With the `trace` argument,
# you can generate columns that show how the wildcards
# were evaluated.
plan <- drake_plan(x = rnorm(n__), y = rexp(n__))
plan <- evaluate_plan(plan, wildcard = "n__", values = 1:2, trace = TRUE)
print(plan)
# With the `trace` argument,
# you can generate columns that show how the wildcards
# were evaluated. Then you can visualize the wildcard groups
# as clusters.
plan <- drake_plan(x = rnorm(n__), y = rexp(n__))
plan <- evaluate_plan(plan, wildcard = "n__", values = 1:2, trace = TRUE)
print(plan)
cache <- storr::storr_environment()
config <- drake_config(plan, cache = cache)
vis_drake_graph(config, group = "n__", clusters = "1")
vis_drake_graph(config, group = "n__", clusters = c("1", "2"))
make(plan, targets = c("x_1", "y_2"), cache = cache)
# Optionally cluster on columns supplied by `drake_graph_info()$nodes`.
vis_drake_graph(config, group = "status", clusters = "up to date")

```

expand_plan

Create replicates of targets.

Description

Duplicates the rows of a workflow plan data frame. Prefixes are appended to the new target names so targets still have unique names.

Usage

```
expand_plan(plan, values = NULL, rename = TRUE)
```

Arguments

plan	workflow plan data frame
values	values to expand over. These will be appended to the names of the new targets.
rename	logical, whether to rename the targets based on the values. See the examples for a demo.

Value

An expanded workflow plan data frame (with replicated targets).

Examples

```
# Create the part of the workflow plan for the datasets.
datasets <- drake_plan(
  small = simulate(5),
  large = simulate(50))
# Create replicates. If you want repeat targets,
# this is convenient.
expand_plan(datasets, values = c("rep1", "rep2", "rep3"))
# Choose whether to rename the targets based on the values.
expand_plan(datasets, values = 1:3, rename = TRUE)
expand_plan(datasets, values = 1:3, rename = FALSE)
```

expose_imports	<i>Expose all the imports in a package so make() can detect all the package's nested functions.</i>
----------------	---

Description

When drake analyzes the functions in your environment, it understands that some of your functions are nested inside other functions. It dives into nested function after nested function in your environment so that if an inner function changes, targets produced by the outer functions will become out of date. However, drake stops searching as soon as it sees a function from a package. This keeps projects from being too brittle, but it is sometimes problematic. You may want to strongly depend on a package's internals. In fact, you may want to wrap your data analysis project itself in a formal R package, so you want all your functions to be reproducibly tracked.

To make all a package's functions available to be tracked as dependencies, use the `expose_imports()` function. See the examples in this help file for a demonstration.

Usage

```
expose_imports(package, character_only = FALSE, envir = parent.frame(),
  jobs = 1)
```

Arguments

package	name of the package, either a symbol or a string, depending on <code>character_only</code> .
character_only	logical, whether to interpret package as a character string or a symbol (quoted vs unquoted).
envir	environment to load the exposed package imports. You will later pass this <code>envir</code> to <code>make()</code> .
jobs	number of parallel jobs for the parallel processing of the imports.

Details

Thanks to [Jasper Clarkberg](#) for the idea that makes this function work.

Value

the environment that the exposed imports are loaded into. Defaults to your R workspace.

Examples

```
## Not run:
test_with_dir("contain this example's side effects", {
# Suppose you have a workflow that uses the `digest()` function,
# which computes the hash of an object.

library(digest) # Has the digest() function.
g <- function(x){
  digest(x)
}
f <- function(x){
  g(x)
}
plan <- drake_plan(x = f(1))

# Here are the reproducibly tracked objects in the workflow.
config <- drake_config(plan)
tracked(config)

# But the digest() function has dependencies too.
head(deps_code(digest))

# Why doesn't `drake` import them? Because it knows `digest()`
# is from a package, and it doesn't usually dive into functions
# from packages. We need to call expose_imports() to expose
# a package's inner functions.

expose_imports(digest)
config <- drake_config(plan)
new_objects <- tracked(config)
head(new_objects, 10)
length(new_objects)

# Now when you call `make()`, `drake` will dive into `digest`
# to import dependencies.

cache <- storr::storr_environment() # just for examples
make(plan, cache = cache)
head(cached(cache = cache), 10)
length(cached(cache = cache))

# Why would you want to expose a whole package like this?
# Because you may want to wrap up your data science project
# as a formal R package. In that case, `expose_imports()`
# tells `drake` to reproducibly track all of your code,
# not just the exported API functions you mention in
# workflow plan commands.
```

```
# Note: if you use `digest::digest()` instead of just `digest()`,
# `drake` does not dive into the function body anymore.
g <- function(x){
  digest::digest(x) # Was previously just digest()
}
config <- drake_config(plan)
tracked(config)
})

## End(Not run)
```

failed

List the targets that failed in the last call to [make\(\)](#).

Description

Together, functions `failed` and `diagnose()` should eliminate the strict need for ordinary error messages printed to the console.

Usage

```
failed(path = getwd(), search = TRUE, cache = drake::get_cache(path =
  path, search = search, verbose = verbose),
  verbose = drake::default_verbose(), upstream_only = FALSE)
```

Arguments

<code>path</code>	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
<code>search</code>	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
<code>cache</code>	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
<code>verbose</code>	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
<code>upstream_only</code>	logical, whether to list only those targets with no failed dependencies. Naturally accompanies <code>make(keep_going = TRUE)</code> .

Value

A character vector of target names.

See Also

[diagnose\(\)](#), [drake_session\(\)](#), [built\(\)](#), [imported\(\)](#), [readd\(\)](#), [drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  failed() # Should show that no targets failed.
  # Build a workflow plan doomed to fail:
  bad_plan <- drake_plan(x = function_doesnt_exist())
  try(make(bad_plan), silent = TRUE) # error
  failed() # "x"
  diagnose(x) # Retrieve the cached error log of x.
})

## End(Not run)
```

file_in

Declare the file inputs of a workflow plan command.

Description

Use this function to help write the commands in your workflow plan data frame. See the examples for a full explanation.

Usage

```
file_in(...)
```

Arguments

... Character strings. File paths of input files to a command in your workflow plan data frame.

Value

A character vector of declared input file paths.

See Also

[file_out\(\)](#), [knitr_in\(\)](#), [ignore\(\)](#)

Examples

```
## Not run:
test_with_dir("Contain side effects", {
  # The `file_out()` and `file_in()` functions
  # just takes in strings and returns them.
  file_out("summaries.txt")
  # Their main purpose is to orchestrate your custom files
  # in your workflow plan data frame.
  suppressWarnings(
    plan <- drake_plan(
      write.csv(mtcars, file_out("mtcars.csv")),
      contents = read.csv(file_in("mtcars.csv")),
      strings_in_dots = "literals" # deprecated but useful: no single quotes needed. # nolint
    )
  )
  plan
  # Drake knows "\"mtcars.csv\"" is the first target
  # and a dependency of `contents`. See for yourself:
  make(plan)
  file.exists("mtcars.csv")
  # See also `knitr_in()`. `knitr_in()` is like `file_in()`
  # except that it analyzes active code chunks in your `knitr`
  # source file and detects non-file dependencies.
  # That way, updates to the right dependencies trigger rebuilds
  # in your report.
  })

## End(Not run)
```

file_out

Declare the file outputs of a workflow plan command.

Description

Use this function to help write the commands in your workflow plan data frame. You can only specify one file output per command. See the examples for a full explanation.

Usage

```
file_out(...)
```

Arguments

... Character vector of output file paths.

Value

A character vector of declared output file paths.

See Also

`file_in()`, `knitr_in()`, `ignore()`

Examples

```
## Not run:
test_with_dir("Contain side effects", {
  # The `file_out()` and `file_in()` functions
  # just takes in strings and returns them.
  file_out("summaries.txt", "output.csv")
  # Their main purpose is to orchestrate your custom files
  # in your workflow plan data frame.
  suppressWarnings(
    plan <- drake_plan(
      write.csv(mtcars, file_out("mtcars.csv")),
      contents = read.csv(file_in("mtcars.csv")),
      strings_in_dots = "literals" # deprecated but useful: no single quotes needed. # nolint
    )
  )
  plan
  # Drake knows "\"mtcars.csv\"" is the first target
  # and a dependency of `contents`. See for yourself:
  make(plan)
  file.exists("mtcars.csv")
  # See also `knitr_in()`. `knitr_in()` is like `file_in()`
  # except that it analyzes active code chunks in your `knitr`
  # source file and detects non-file dependencies.
  # That way, updates to the right dependencies trigger rebuilds
  # in your report.
  })

## End(Not run)
```

file_store

Tell drake that you want information on a file (target or import), not an ordinary object.

Description

This function simply wraps literal double quotes around the argument `x` so drake knows it is the name of a file. Use when you are calling functions like `deps_code()`: for example, `deps_code(file_store("report.md"))`. See the examples for details. Internally, drake wraps the names of file targets/imports inside literal double quotes to avoid confusion between files and generic R objects.

Usage

```
file_store(x)
```

Arguments

x character string to be turned into a filename understandable by drake (i.e., a string with literal single quotes on both ends).

Value

A single-quoted character string: i.e., a filename understandable by drake.

Examples

```
# Wraps the string in single quotes.
file_store("my_file.rds") # "'my_file.rds'"
## Not run:
test_with_dir("contain side effects", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the workflow to build the targets
  list.files() # Should include input "report.Rmd" and output "report.md".
  head(readd(small)) # You can use symbols for ordinary objects.
# But if you want to read cached info on files, use `file_store()`.
readd(file_store("report.md"), character_only = TRUE) # File fingerprint.
deps_code(file_store("report.Rmd"))
config <- drake_config(my_plan)
dependency_profile(file_store("report.Rmd"), config = config)
load(list = file_store("report.md"))
get(file_store("report.md"))
})

## End(Not run)
```

find_cache

Search up the file system for the nearest drake cache.

Description

Only works if the cache is a file system in a hidden folder named `.drake` (default).

Usage

```
find_cache(path = getwd(),
  directory = basename(drake::default_cache_path()))
```

Arguments

path starting path for search back for the cache. Should be a subdirectory of the drake project.

directory Name of the folder containing the cache.

Value

File path of the nearest drake cache or NULL if no cache is found.

See Also

[drake_plan\(\)](#), [make\(\)](#),

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the target.
  # Find the file path of the project's cache.
  # Search up through parent directories if necessary.
  find_cache()
})

## End(Not run)
```

find_project

Search up the file system for the nearest root path of a drake project.

Description

Only works if the cache is a file system in a folder named `.drake` (default).

Usage

```
find_project(path = getwd())
```

Arguments

`path` starting path for search back for the project. Should be a subdirectory of the drake project.

Value

File path of the nearest drake project or NULL if no drake project is found.

See Also

[drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the target.
  # Find the root directory of the current drake project.
  # Search up through parent directories if necessary.
  find_cache()
})

## End(Not run)
```

gather_by

*Gather multiple groupings of targets***Description**

Perform several calls to `gather_plan()` based on groupings from columns in the plan, and then row-bind the new targets to the plan.

Usage

```
gather_by(plan, ..., prefix = "target", gather = "list")
```

Arguments

plan	workflow plan data frame of prespecified targets
...	Symbols, columns of plan to define target groupings passed to <code>dplyr::group_by()</code> . A <code>gather_plan()</code> call is applied for each grouping. Groupings with all NAs in the selector variables are ignored.
prefix	character, prefix for naming the new targets. Suffixes are generated from the values of the columns specified in
gather	function used to gather the targets. Should be one of <code>list(...)</code> , <code>c(...)</code> , <code>rbind(...)</code> , or similar.

See Also

`gather_plan`, `reduce_plan`, `reduce_by`

Examples

```
plan <- drake_plan(
  data = get_data(),
  informal_look = inspect_data(data, mu = mu__),
  bayes_model = bayesian_model_fit(data, prior_mu = mu__)
)
plan <- evaluate_plan(plan, rules = list(mu__ = 1:2), trace = TRUE)
```

```
gather_by(plan, mu___from, gather = "dplyr::bind_rows")
gather_by(plan, mu__, mu___from, prefix = "x")
reduce_by(plan, mu___from, begin = "list(", end = ")", op = ", ")
reduce_by(plan, mu__, mu___from)
```

gather_plan	<i>Write commands to combine several targets into one or more overarching targets.</i>
-------------	--

Description

Creates a new workflow plan data frame with a single new target. This new target is a list, vector, or other aggregate of a collection of existing targets in another workflow plan data frame.

Usage

```
gather_plan(plan = NULL, target = "target", gather = "list")
```

Arguments

plan	workflow plan data frame of prespecified targets
target	name of the new aggregated target
gather	function used to gather the targets. Should be one of <code>list(...)</code> , <code>c(...)</code> , <code>rbind(...)</code> , or similar.

Value

A workflow plan data frame that aggregates multiple prespecified targets into one additional target downstream.

Examples

```
# Workflow plan for datasets:
datasets <- drake_plan(
  small = simulate(5),
  large = simulate(50))
# Create a new target that brings the datasets together.
gather_plan(datasets, target = "my_datasets")
# This time, the new target just appends the rows of 'small' and 'large'
# into a single matrix or data frame.
gathered <- gather_plan(
  datasets, target = "aggregated_data", gather = "rbind"
)
gathered
# For the complete workflow plan, row bind the pieces together.
my_plan <- rbind(datasets, gathered)
my_plan
```

get_cache	<i>Get the drake cache, optionally searching up the file system.</i>
-----------	--

Description

Only works if the cache is in a folder called `.drake/`.

Usage

```
get_cache(path = getwd(), search = TRUE,
          verbose = drake::default_verbose(), force = FALSE,
          fetch_cache = NULL, console_log_file = NULL)
```

Arguments

path	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or <code>FALSE</code> : print nothing. 1 or <code>TRUE</code> : print only targets to build. 2 : in addition, print checks and cache info. 3 : in addition, print any potentially missing items. 4 : in addition, print imports. Full verbosity.
force	logical, whether to load the cache despite any back compatibility issues with the running version of drake.
fetch_cache	character vector containing lines of code. The purpose of this code is to fetch the <code>storr</code> cache with a command like <code>storr_rds()</code> or <code>storr_dbi()</code> , but customized. This feature is experimental.
console_log_file	character scalar or <code>NULL</code> . If <code>NULL</code> , console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.

Value

A drake/storr cache in a folder called `.drake/`, if available. `NULL` otherwise.

See Also

[this_cache\(\)](#), [new_cache\(\)](#), [recover_cache\(\)](#), [drake_config\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  clean(destroy = TRUE)
  # No cache is available.
  get_cache() # NULL
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  x <- get_cache() # Now, there is a cache.
  # List the objects readable from the cache with readd().
  x$list() # Or x$list(namespace = x$default_namespace)
})

## End(Not run)
```

ignore

Ignore components of commands and imported functions.

Description

In a command in the workflow plan or the body of an imported function, you can `ignore(some_code)` to

1. Force drake to not track dependencies in `some_code`, and
2. Ignore any changes in `some_code` when it comes to deciding which target are out of date.

Usage

```
ignore(x = NULL)
```

Arguments

x code to ignore

Value

the argument

See Also

[file_in\(\)](#), [file_out\(\)](#), [knitr_in\(\)](#)

Examples

```
## Not run:
test_with_dir("Contain side effects", {
# Normally, `drake` reacts to changes in dependencies.
x <- 4
make(plan = drake_plan(y = sqrt(x)))
x <- 5
make(plan = drake_plan(y = sqrt(x)))
make(plan = drake_plan(y = sqrt(4) + x))
# But not with ignore().
make(plan = drake_plan(y = sqrt(4) + ignore(x))) # Builds y.
x <- 6
make(plan = drake_plan(y = sqrt(4) + ignore(x))) # Skips y.
make(plan = drake_plan(y = sqrt(4) + ignore(x + 1))) # Skips y.
# What about imported functions?
f <- function(x) sqrt(4) + ignore(x + 1)
make(plan = drake_plan(x = f(2)))
readd(x)
f <- function(x) sqrt(4) + ignore(x + 2)
make(plan = drake_plan(x = f(2)))
readd(x)
f <- function(x) sqrt(5) + ignore(x + 2)
make(plan = drake_plan(x = f(2)))
readd(x)
})

## End(Not run)
```

imported

List all the imports in the drake cache.

Description

An import is a non-target object processed by `make()`. Targets in the workflow plan data frame (see `drake_config()`) may depend on imports.

Usage

```
imported(files_only = FALSE, path = getwd(), search = TRUE,
         cache = drake::get_cache(path = path, search = search, verbose =
         verbose), verbose = drake::default_verbose(), jobs = 1)
```

Arguments

<code>files_only</code>	logical, whether to show imported files only and ignore imported objects. Since all your functions and all their global variables are imported, the full list of imported objects could get really cumbersome.
<code>path</code>	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.

search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
jobs	number of jobs/workers for parallel processing

Value

Character vector naming the imports in the cache.

See Also

[cached\(\)](#), [loadd\(\)](#), [built\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Load the canonical example.
  make(my_plan) # Run the project, build the targets.
  imported() # List all the imported objects/files in the cache.
  # For imported files, only the fingerprints/hashes are stored.
})

## End(Not run)
```

in_progress	<i>List the targets that either (1) are currently being built during a make(), or (2) were being built if the last make() quit unexpectedly.</i>
-------------	--

Description

Similar to [progress\(\)](#).

Usage

```
in_progress(path = getwd(), search = TRUE,
  cache = drake::get_cache(path = path, search = search, verbose =
  verbose), verbose = drake::default_verbose())
```

Arguments

path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

Value

A character vector of target names.

See Also

[diagnose\(\)](#), [drake_session\(\)](#), [built\(\)](#), [imported\(\)](#), [readd\(\)](#), [drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Kill before targets finish.
  # If you interrupted make(), some targets will probably be listed:
  in_progress()
})

## End(Not run)
```

knitr_deps

Find the drake dependencies of a dynamic knitr report target.

Description

To enable drake to watch for the dependencies of a knitr report, the command in your workflow plan data frame must call `knitr::knit()` directly. In other words, the command must look something like `knit("your_report.Rmd")` or `knit("your_report.Rmd", quiet = TRUE)`.

Usage

```
knitr_deps(target)
```

Arguments

target file path to the file or name of the file target, source text of the document.

Details

Drake looks for dependencies in the document by analyzing evaluated code chunks for other targets/imports mentioned in `loadadd()` and `readadd()`.

Value

A character vector of the names of dependencies.

See Also

`deps_code()`, `make()`, `load_mtcars_example()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  knitr_deps("'report.Rmd'") # Files must be single-quoted.
  # Find the dependencies of the compiled output target, 'report.md'.
  knitr_deps("report.Rmd")
  make(my_plan) # Run the project.
  # Work only on the Rmd source, not the output.
  try(knitr_deps("'report.md'"), silent = FALSE) # error
})

## End(Not run)
```

knitr_in

Declare the knitr/rmarkdown source files of a workflow plan command.

Description

Use this function to help write the commands in your workflow plan data frame. See the examples for a full explanation.

Usage

```
knitr_in(...)
```

Arguments

... Character strings. File paths of knitr/rmarkdown source files supplied to a command in your workflow plan data frame.

Value

A character vector of declared input file paths.

See Also

[file_in\(\)](#), [file_out\(\)](#), [ignore\(\)](#)

Examples

```
## Not run:
test_with_dir("Contain side effects", {
# `knitr_in()` is like `file_in()`
# except that it analyzes active code chunks in your `knitr`
# source file and detects non-file dependencies.
# That way, updates to the right dependencies trigger rebuilds
# in your report.
# The mtcars example (`drake_example("mtcars")`)
# already has a demonstration
load_mtcars_example()
make(my_plan)
# Now how did drake magically know that
# `small`, `large`, and `coef_regression2_small` were
# dependencies of the output file `report.md`?
# because the command in the workflow plan had
# `knitr_in("report.Rmd")` in it, so drake knew
# to analyze the active code chunks. There, it spotted
# where `small`, `large`, and `coef_regression2_small`
# were read from the cache using calls to `load()` and `read()`.
})

## End(Not run)
```

legend_nodes

Create the nodes data frame used in the legend of the graph visualizations.

Description

Output a visNetwork-friendly data frame of nodes. It tells you what the colors and shapes mean in the graph visualizations.

Usage

```
legend_nodes(font_size = 20)
```

Arguments

font_size font size of the node label text

Value

A data frame of legend nodes for the graph visualizations.

Examples

```
## Not run:
# Show the legend nodes used in graph visualizations.
# For example, you may want to inspect the color palette more closely.
visNetwork::visNetwork(nodes = legend_nodes()) # nolint

## End(Not run)
```

```
load_mtcars_example Load the mtcars example from drake_example("mtcars")
```

Description

Is there an association between the weight and the fuel efficiency of cars? To find out, we use the mtcars dataset. The mtcars dataset itself only has 32 rows, so we generate two larger bootstrapped datasets and then analyze them with regression models. Finally, we summarize the regression models to see if there is an association.

Usage

```
load_mtcars_example(envir = parent.frame(), report_file = "report.Rmd",
  overwrite = FALSE, force = FALSE)
```

Arguments

envir	The environment to load the example into. Defaults to your workspace. For an insulated workspace, set <code>envir = new.env(parent = globalenv())</code> .
report_file	where to write the report file <code>report.Rmd</code> .
overwrite	logical, whether to overwrite an existing file <code>report.Rmd</code>
force	logical, whether to force the loading of a non-back-compatible cache from a previous version of drake.

Details

Use `drake_example("mtcars")` to get the code for the mtcars example. The included R script is a detailed, heavily-commented walkthrough. The chapter of the user manual at <https://ropenscilabs.github.io/drake-manual/mtcars.html> # nolint also walks through the mtcars example. This function also writes/overwrites the file, `report.Rmd`.

Value

A `drake_config()` configuration list.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  # Populate your workspace and write 'report.Rmd'.
  load_mtcars_example() # Get the code: drake_example("mtcars")
  # Check the dependencies of an imported function.
  deps_code(reg1)
  # Check the dependencies of commands in the workflow plan.
  deps_code(my_plan$command[1])
  deps_code(my_plan$command[4])
  # Plot the interactive network visualization of the workflow.
  config <- drake_config(my_plan)
  outdated(config) # Which targets are out of date?
  # Run the workflow to build all the targets in the plan.
  make(my_plan)
  outdated(config) # Everything should be up to date.
  # For the reg2() model on the small dataset,
  # the p-value is so small that there may be an association
  # between weight and fuel efficiency after all.
  readd(coef_regression2_small)
  # Remove the whole cache.
  clean(destroy = TRUE)
  # Clean up the imported file.
  unlink("report.Rmd")
})

## End(Not run)
```

long_hash

Get the long hash algorithm of a drake cache.

Description

See the advanced storage tutorial at <https://ropenscilabs.github.io/drake-manual/store.html> for details.

Usage

```
long_hash(cache = drake::get_cache(verbose = verbose),
          verbose = drake::default_verbose())
```

Arguments

cache	drake cache. See <code>new_cache()</code> . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing.</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build.

- 2: in addition, print checks and cache info.
- 3: in addition, print any potentially missing items.
- 4: in addition, print imports. Full verbosity.

Value

A character vector naming a hash algorithm.

See Also

[default_short_hash_algo\(\)](#), [default_long_hash_algo\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Run the project and return the internal master configuration list.
  config <- make(my_plan)
  # Locate the storrr cache.
  cache <- config$cache
  # Get the long hash algorithm of the cache.
  long_hash(cache)
})

## End(Not run)
```

make

Run your project (build the outdated targets).

Description

This is the central, most important function of the drake package. It runs all the steps of your workflow in the correct order, skipping any work that is already up to date. See <https://github.com/ropensci/drake/blob/master/README.md#documentation> for an overview of the documentation.

Usage

```
make(plan = read_drake_plan(), targets = NULL,
     envir = parent.frame(), verbose = drake::default_verbose(),
     hook = default_hook, cache = drake::get_cache(verbose = verbose,
     force = force, console_log_file = console_log_file),
     fetch_cache = NULL, parallelism = drake::default_parallelism(),
     jobs = 1, packages = rev(.packages()), prework = character(0),
     prepend = character(0), command = drake::default_Makefile_command(),
     args = drake::default_Makefile_args(jobs = jobs, verbose = verbose),
     recipe_command = drake::default_recipe_command(),
```

```
log_progress = TRUE, skip_targets = FALSE, timeout = Inf,
cpu = NULL, elapsed = NULL, retries = 0, force = FALSE,
return_config = NULL, graph = NULL, trigger = drake::trigger(),
skip_imports = FALSE, skip_safety_checks = FALSE, config = NULL,
lazy_load = "eager", session_info = TRUE, cache_log_file = NULL,
seed = NULL, caching = "worker", keep_going = FALSE,
session = NULL, imports_only = NULL,
pruning_strategy = c("lookahead", "speed", "memory"),
makefile_path = "Makefile", console_log_file = NULL,
ensure_workers = TRUE, garbage_collection = FALSE,
template = list())
```

Arguments

plan	workflow plan data frame. A workflow plan data frame is a data frame with a target column and a command column. (See the details in the drake_plan() help file for descriptions of the optional columns.) Targets are the objects and files that drake generates, and commands are the pieces of R code that produce them. Use the function drake_plan() to generate workflow plan data frames easily, and see functions plan_analyses() , plan_summaries() , evaluate_plan() , expand_plan() , and gather_plan() for easy ways to generate large workflow plan data frames.
targets	character vector, names of targets to build. Dependencies are built too. Together, the plan and targets comprise the workflow network (i.e. the graph argument). Changing either will change the network.
envir	environment to use. Defaults to the current workspace, so you should not need to worry about this most of the time. A deep copy of envir is made, so you don't need to worry about your workspace being modified by make. The deep copy inherits from the global environment. Wherever necessary, objects and functions are imported from envir and the global environment and then reproducibly tracked as dependencies.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing.</code> 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
hook	function with at least one argument. The hook is as a wrapper around the code that drake uses to build a target (see the body of <code>drake:::build_in_hook()</code>). Hooks can control the side effects of build behavior. For example, to redirect output and error messages to text files, you might use the built-in silencer_hook() , as in <code>make(my_plan, hook = silencer_hook)</code> . The silencer hook is useful for distributed parallelism, where the calling R process does not have control over all the error and output streams. See also output_sink_hook() and message_sink_hook() . For your own custom hooks, treat the first argument as the code that builds a target, and make sure this argument is actually evaluated.

Otherwise, the code will not run and none of your targets will build. For example, `function(code){force(code)}` is a good hook and `function(code){message("Avoiding the co... is a bad hook.`

cache	drake cache as created by <code>new_cache()</code> . See also <code>get_cache()</code> and <code>this_cache()</code> .
fetch_cache	character vector containing lines of code. The purpose of this code is to fetch the storr cache with a command like <code>storr_rds()</code> or <code>storr_dbi()</code> , but customized. This feature is experimental. It will turn out to be necessary if you are using both custom non-RDS caches and distributed parallelism (<code>parallelism = "future_lapply"</code> or <code>"Makefile"</code>) because the distributed R sessions need to know how to load the cache.
parallelism	character, type of parallelism to use. To list the options, call <code>parallelism_choices()</code> . For detailed explanations, see the high-performance computing chapter # nolint of the user manual.
jobs	number of parallel processes or jobs to run. See <code>predict_runtime()</code> to help figure out what the number of jobs should be. Windows users should not set <code>jobs > 1</code> if <code>parallelism</code> is <code>"mclapply"</code> because <code>mclapply()</code> is based on forking. Windows users who use <code>parallelism = "Makefile"</code> will need to download and install Rtools. Imports and targets are processed separately, and they usually have different parallelism needs. To use at most 2 jobs at a time for imports and at most 4 jobs at a time for targets, call <code>make(..., jobs = c(imports = 2, targets = 4))</code> . If <code>parallelism</code> is <code>"Makefile"</code> , Makefile-level parallelism is only used for targets in your workflow plan data frame, not imports. To process imported objects and files, drake selects the best parallel backend for your system and uses the number of jobs you give to the <code>jobs</code> argument to <code>make()</code> . To use at most 2 jobs for imports and at most 4 jobs for targets, run <code>make(..., parallelism = "Makefile", jobs = c(imports = 2, targets = 4))</code> or <code>make(..., parallelism = "Makefile", jobs = 2, args = "--jobs=4")</code> .
packages	character vector packages to load, in the order they should be loaded. Defaults to <code>rev(.packages())</code> , so you should not usually need to set this manually. Just call <code>library()</code> to load your packages before <code>make()</code> . However, sometimes packages need to be strictly forced to load in a certain order, especially if <code>parallelism</code> is <code>"Makefile"</code> . To do this, do not use <code>library()</code> or <code>require()</code> or <code>loadNamespace()</code> or <code>attachNamespace()</code> to load any libraries beforehand. Just list your packages in the <code>packages</code> argument in the order you want them to be loaded. If <code>parallelism</code> is <code>"mclapply"</code> , the necessary packages are loaded once before any targets are built. If <code>parallelism</code> is <code>"Makefile"</code> , the necessary packages are loaded once on initialization and then once again for each target right before that target is built.
prework	character vector of lines of code to run before build time. This code can be used to load packages, set options, etc., although the packages in the <code>packages</code> argument are loaded before any prework is done. If <code>parallelism</code> is <code>"mclapply"</code> , the prework is run once before any targets are built. If <code>parallelism</code> is <code>"Makefile"</code> , the prework is run once on initialization and then once again for each target right before that target is built.
prepend	lines to prepend to the Makefile if <code>parallelism</code> is <code>"Makefile"</code> . See the high-performance computing guide # nolint to learn how to use <code>prepend</code> to take advantage of multiple nodes of a supercomputer.

command	character scalar, command to call the Makefile generated for distributed computing. Only applies when parallelism is "Makefile". Defaults to the usual "make" (<code>default_Makefile_command()</code>), but it could also be "lsmake" on supporting systems, for example. <code>command</code> and <code>args</code> are executed via <code>system2(command, args)</code> to run the Makefile. If <code>args</code> has something like "--jobs=2", or if <code>jobs >= 2</code> and <code>args</code> is left alone, targets will be distributed over independent parallel R sessions wherever possible.
args	command line arguments to call the Makefile for distributed computing. For advanced users only. If set, <code>jobs</code> and <code>verbose</code> are overwritten as they apply to the Makefile. <code>command</code> and <code>args</code> are executed via <code>system2(command, args)</code> to run the Makefile. If <code>args</code> has something like "--jobs=2", or if <code>jobs >= 2</code> and <code>args</code> is left alone, targets will be distributed over independent parallel R sessions wherever possible.
recipe_command	Character scalar, command for the Makefile recipe for each target.
log_progress	logical, whether to log the progress of individual targets as they are being built. Progress logging creates a lot of little files in the cache, and it may make builds a tiny bit slower. So you may see gains in storage efficiency and speed with <code>make(..., log_progress = FALSE)</code> . But be warned that <code>progress()</code> and <code>in_progress()</code> will no longer work if you do that.
skip_targets	logical, whether to skip building the targets in <code>plan</code> and just import objects and files.
timeout	Seconds of overall time to allow before imposing a timeout on a target. Passed to <code>R.utils::withTimeout()</code> . Assign target-level timeout times with an optional <code>timeout</code> column in <code>plan</code> .
cpu	Seconds of cpu time to allow before imposing a timeout on a target. Passed to <code>R.utils::withTimeout()</code> . Assign target-level cpu timeout times with an optional <code>cpu</code> column in <code>plan</code> .
elapsed	Seconds of elapsed time to allow before imposing a timeout on a target. Passed to <code>R.utils::withTimeout()</code> . Assign target-level elapsed timeout times with an optional <code>elapsed</code> column in <code>plan</code> .
retries	Number of retries to execute if the target fails. Assign target-level retries with an optional <code>retries</code> column in <code>plan</code> .
force	Force <code>make()</code> to build your targets even if some about your setup is not quite right: for example, if you are using a version of <code>drake</code> that is not back compatible with your project's cache.
return_config	Logical, whether to return the internal list of runtime configuration parameters used by <code>make()</code> . This argument is deprecated. Now, a configuration list is always invisibly returned.
graph	An <code>igraph</code> object from the previous <code>make()</code> . Supplying a pre-built graph could save time. The graph is constructed by <code>build_drake_graph()</code> . You can also get one from <code>drake_config(my_plan)\$graph</code> . Overrides <code>skip_imports</code> .
trigger	Name of the trigger to apply to all targets. Ignored if <code>plan</code> has a <code>trigger</code> column. See <code>trigger()</code> for details.
skip_imports	logical, whether to totally neglect to process the imports and jump straight to the targets. This can be useful if your imports are massive and you just want to test

your project, but it is bad practice for reproducible data analysis. This argument is overridden if you supply your own graph argument.

skip_safety_checks	logical, whether to skip the safety checks on your workflow. Use at your own peril.
config	Master configuration list produced by both <code>make()</code> and <code>drake_config()</code> .
lazy_load	<p>either a character vector or a logical. Choices:</p> <ul style="list-style-type: none"> • "eager": no lazy loading. The target is loaded right away with <code>assign()</code>. • "promise": lazy loading with <code>delayedAssign()</code> • "bind": lazy loading with active bindings: <code>bindr::populate_env()</code>. • TRUE: same as "promise". • FALSE: same as "eager". <p><code>lazy_load</code> should not be "promise" for "parLapply" parallelism combined with jobs greater than 1. For local multi-session parallelism and lazy loading, try <code>library(future); future::plan(multisession)</code> and then <code>make(..., parallelism = "future")</code>. If <code>lazy_load</code> is "eager", drake prunes the execution environment before each target/stage, removing all superfluous targets and then loading any dependencies it will need for building. In other words, drake prepares the environment in advance and tries to be memory efficient. If <code>lazy_load</code> is "bind" or "promise", drake assigns promises to load any dependencies at the last minute. Lazy loading may be more memory efficient in some use cases, but it may duplicate the loading of dependencies, costing time.</p>
session_info	logical, whether to save the <code>sessionInfo()</code> to the cache. This behavior is recommended for serious <code>make()</code> s for the sake of reproducibility. This argument only exists to speed up tests. Apparently, <code>sessionInfo()</code> is a bottleneck for small <code>make()</code> s.
cache_log_file	Name of the cache log file to write. If TRUE, the default file name is used (<code>drake_cache.log</code>). If NULL, no file is written. If activated, this option uses <code>drake_cache_log_file()</code> to write a flat text file to represent the state of the cache (fingerprints of all the targets and imports). If you put the log file under version control, your commit history will give you an easy representation of how your results change over time as the rest of your project changes. Hopefully, this is a step in the right direction for data reproducibility.
seed	<p>integer, the root pseudo-random seed to use for your project. To ensure reproducibility across different R sessions, <code>set.seed()</code> and <code>.Random.seed</code> are ignored and have no affect on drake workflows. Conversely, <code>make()</code> does not change <code>.Random.seed</code>, even when pseudo-random numbers are generated.</p> <p>On the first call to <code>make()</code> or <code>drake_config()</code>, drake uses the random number generator seed from the <code>seed</code> argument. Here, if the <code>seed</code> is NULL (default), drake uses a seed of \emptyset. On subsequent <code>make()</code>s for existing projects, the project's cached seed will be used in order to ensure reproducibility. Thus, the <code>seed</code> argument must either be NULL or the same seed from the project's cache (usually the <code>.drake/</code> folder). To reset the random number generator seed for a project, use <code>clean(destroy = TRUE)</code>.</p>
caching	character string, only applies to "future" parallelism. Can be either "master" or "worker".

	<ul style="list-style-type: none"> • "master": Targets are built by remote workers and sent back to the master process. Then, the master process saves them to the cache (config\$cache, usually a file system stor). Appropriate if remote workers do not have access to the file system of the calling R session. Targets are cached one at a time, which may be slow in some situations. • "worker": Remote workers not only build the targets, but also save them to the cache. Here, caching happens in parallel. However, remote workers need to have access to the file system of the calling R session. Transferring target data across a network can be slow.
keep_going	logical, whether to still keep running <code>make()</code> if targets fail.
session	An optional <code>callr</code> function if you want to build all your targets in a separate master session: for example, <code>make(plan = my_plan, session = callr::r_vanilla)</code> . Running <code>make()</code> in a clean, isolated session can enhance reproducibility. But be warned: if you do this, <code>make()</code> will take longer to start. If <code>session</code> is <code>NULL</code> (default), then <code>make()</code> will just use your current R session as the master session. This is slightly faster, but it causes <code>make()</code> to populate your workspace/environment with the last few targets it builds.
imports_only	deprecated. Use <code>skip_targets</code> instead.
pruning_strategy	Character scalar, name of the approach that drake takes regarding when to unload targets from memory. Choices: <ul style="list-style-type: none"> • "lookahead" (default): keep loaded targets in memory until they are no longer needed as dependencies in downstream build steps. Then, unload them from the environment. This step avoids keeping unneeded data in memory and minimizes expensive reads from the cache. However, it requires looking ahead in the dependency graph, which could add overhead for every target of projects with lots of targets. • "speed": Once a target is loaded in memory, just keep it there. Maximizes speed, but hogs memory. • "memory": For each target, unload everything from memory except the target's direct dependencies. Conserves memory, but sacrifices speed because each new target needs to reload any previously unloaded targets from the cache.
makefile_path	Path to the Makefile for <code>make(parallelism = "Makefile")</code> . If you set this argument to a non-default value, you are responsible for supplying this same path to the <code>args</code> argument so <code>make</code> knows where to find it. Example: <code>make(parallelism = "Makefile", makefile_path = ".drake/.makefile", command = "make", a # nolint</code>
console_log_file	character scalar or <code>NULL</code> . If <code>NULL</code> , console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.
ensure_workers	logical, whether the master process should wait for the workers to post before assigning them targets. Should usually be <code>TRUE</code> . Set to <code>FALSE</code> for <code>make(parallelism = "future_lapply", (n > 1)</code> when combined with <code>future::plan(future::sequential)</code> . This argument only applies to parallel computing with persistent workers (<code>make(parallelism = x)</code> , where <code>x</code> could be <code>"mclapply"</code> , <code>"parLapply"</code> , or <code>"future_lapply"</code>).

`garbage_collection` logical, whether to call `gc()` each time a target is built during `make()`.

`template` a named list of values to fill in the `{{ ... }}` placeholders in template files (e.g. from `drake_hpc_template_file()`). Same as the `template` argument of `clustermq::Q()` and `clustermq::workers`. Enabled for `clustermq` only (`make(parallelism = "clustermq_staged")`), not `future` or `batchtools` so far. For more information, see the `clustermq` package: <https://github.com/mschubert/clustermq>. Some template placeholders such as `{{ job_name }}` and `{{ n_jobs }}` cannot be set this way.

Value

The master internal configuration list, mostly containing arguments to `make()` and important objects constructed along the way. See `drake_config()` for more details.

See Also

[drake_plan\(\)](#), [drake_config\(\)](#), [vis_drake_graph\(\)](#), [evaluate_plan\(\)](#), [outdated\(\)](#), [parallelism_choices\(\)](#), [triggers\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan)
  outdated(config) # Which targets need to be (re)built?
  make(my_plan, jobs = 2) # Build what needs to be built.
  outdated(config) # Everything is up to date.
  # Change one of your imported function dependencies.
  reg2 = function(d){
    d$x3 = d$x^3
    lm(y ~ x3, data = d)
  }
  outdated(config) # Some targets depend on reg2().
  make(my_plan) # Rebuild just the outdated targets.
  outdated(config) # Everything is up to date again.
  vis_drake_graph(config) # See how they fit in an interactive graph.
  make(my_plan, cache_log_file = TRUE) # Write a text log file this time.
  vis_drake_graph(config) # The colors changed in the graph.
  clean() # Start from scratch.
  # Run with at most 2 jobs at a time for the imports
  # and at most 4 jobs at a time for the targets.
  make(my_plan, jobs = c(imports = 2, targets = 4))
  clean() # Start from scratch.
  # Rerun with "Makefile" parallelism with at most 4 jobs.
  # Requires Rtools on Windows.
  # make(my_plan, parallelism = "Makefile", jobs = 4) # nolint
  clean() # Start from scratch.
  # Specify your own Makefile recipe.
  # Requires Rtools on Windows.
  # make(my_plan, parallelism = "Makefile", jobs = 4, # nolint
```

```

# recipe_command = "R -q -e") # nolint
#
# make() respects tidy evaluation as implemented in the rlang package.
# This workflow plan uses rlang's quasiquotation operator `!!`.
my_plan <- drake_plan(list = c(
  little_b = "\"b\"",
  letter = "!!little_b"
))
my_plan
make(my_plan)
readd(letter) # "b"
})

## End(Not run)

```

Makefile_recipe	<i>For make(..., parallelism = "Makefile"), see what your Makefile recipes will look like in advance.</i>
-----------------	---

Description

Relevant to "Makefile" parallelism only.

Usage

```

Makefile_recipe(recipe_command = drake::default_recipe_command(),
  target = "your_target", cache_path = drake::default_cache_path())

```

Arguments

recipe_command	The Makefile recipe command. See default_recipe_command() .
target	character scalar, name of your target
cache_path	path to the drake cache. In practice, this defaults to the hidden <code>.drake/</code> folder, but this can be customized. In the Makefile, the drake cache is coded with the Unix variable <code>DRAKE_CACHE</code> and then dereferenced with <code>\$(DRAKE_CACHE)</code> . To simplify things for users who may be unfamiliar with Unix variables, the <code>recipe()</code> function just shows the literal path to the cache.

Details

Makefile recipes to build targets are customizable. Use the `Makefile_recipe()` function to show and tweak Makefile recipes in advance, and see [default_recipe_command\(\)](#) and [r_recipe_wildcard\(\)](#) for more clues. The default recipe is `Rscript -e 'R_RECIPE'`, where `R_RECIPE` is the wildcard for the recipe in R for making the target. In writing the Makefile, `R_RECIPE` is replaced with something like `drake::mk("name_of_target", "path_to_cache")`. So when you call `make(..., parallelism = "Makefile", recipe_command = "R -e 'R_RECIPE' -q")`, # nolint from within R, the Makefile builds each target with the Makefile recipe, `R -e 'drake::mk("this_target", "path_to_cache")`. But since `R -q -e` fails on Windows, so the default `recipe_command` argument is `"Rscript -e 'R_RECIPE'"` (equivalently just `"Rscript -e"`), so the default Makefile recipe for each target is `Rscript -e 'drake::mk("this_target"`

Value

A character scalar with a Makefile recipe.

See Also

[default_recipe_command\(\)](#), [r_recipe_wildcard\(\)](#), [make\(\)](#)

Examples

```
# Only relevant for "Makefile" parallelism.
# Show an example Makefile recipe.
Makefile_recipe(cache_path = "path") # `cache_path` has a reliable default.
# Customize your Makefile recipe.
Makefile_recipe(
  target = "this_target",
  recipe_command = "R -e 'R_RECIPE' -q",
  cache_path = "custom_cache"
)
default_recipe_command() # "Rscript -e 'R_RECIPE'" # nolint
r_recipe_wildcard() # "R_RECIPE"
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Look at the Makefile generated by the following.
  # make(my_plan, parallelism = "Makefile") # Requires Rtools on Windows. # nolint
  # Generates a Makefile with "R -q -e" rather than
  # "Rscript -e".
  # Be aware the R -q -e fails on Windows.
  # make(my_plan, parallelism = "Makefile", jobs = 2, # nolint
  #   recipe_command = "R -q -e") # nolint
  # Same thing:
  clean() # Start from scratch.
  # make(my_plan, parallelism = "Makefile", jobs = 2, # nolint
  #   recipe_command = "R -q -e 'R_RECIPE'") # nolint
  clean() # Start from scratch.
  # make(my_plan, parallelism = "Makefile", jobs = 2, # nolint
  #   recipe_command = "R -e 'R_RECIPE' -q") # nolint
})

## End(Not run)
```

make_imports

Just make the imports.

Description

`make()` is the central, most important function of the drake package. `make()` runs all the steps of your workflow in the correct order, skipping any work that is already up to date. During `make()`, there are two kinds of processing steps: "imports", which are pre-existing functions and input data

files that are loaded or checked, and targets, which are serious reproducibly-tracked data analysis steps that have commands in your workflow plan data frame. The `make_targets()` function just makes the targets (skipping any targets that are already up to date) and `make_imports()` just makes the imports. Most users should just use `make()` instead of either `make_imports()` or `make_targets()`. See <https://github.com/ropensci/drake/blob/master/README.md#documentation> for an overview of the documentation.

Usage

```
make_imports(config = drake::read_drake_config())
```

Arguments

`config` a configuration list returned by `drake_config()`

Value

The master internal configuration list used by `make()`.

See Also

`make()`, `drake_config()`, `make_targets()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Generate the master internal configuration list.
  con <- drake_config(my_plan)
  # Just cache the imports, do not build any targets.
  make_imports(config = con)
  # Just make the targets
  make_targets(config = con)
})

## End(Not run)
```

make_targets	<i>Just build the targets.</i>
--------------	--------------------------------

Description

`make()` is the central, most important function of the drake package. `make()` runs all the steps of your workflow in the correct order, skipping any work that is already up to date. During `make()`, there are two kinds of processing steps: "imports", which are pre-existing functions and input data files that are loaded or checked, and targets, which are serious reproducibly-tracked data analysis steps that have commands in your workflow plan data frame. The `make_targets()` function just makes the targets (skipping any targets that are already up to date) and `make_imports()`

just makes the imports. Most users should just use `make()` instead of either `make_imports()` or `make_targets()`. See <https://github.com/ropensci/drake/blob/master/README.md#documentation> for an overview of the documentation.

Usage

```
make_targets(config = drake::read_drake_config())
```

Arguments

`config` a configuration list returned by `drake_config()`

Value

The master internal configuration list used by `make()`.

See Also

`make()`, `drake_config()`, `make_imports()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Generate the master internal configuration list.
  con <- drake_config(my_plan)
  # Just cache the imports, do not build any targets.
  make_imports(config = con)
  # Just make the targets
  make_targets(config = con)
})

## End(Not run)
```

make_with_config	<i>Run <code>make()</code>, on an existing internal configuration list.</i>
------------------	---

Description

Use `drake_config()` to create the config argument.

Usage

```
make_with_config(config = drake::read_drake_config())
```

Arguments

`config` An input internal configuration list

Value

An output internal configuration list

See Also

[make\(\)](#), [drake_config\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # The following lines are the same as make(my_plan)
  config <- drake_config(my_plan) # Create the internal config list.
  make_with_config(config = config) # Run the project, build the targets.
})

## End(Not run)
```

message_sink_hook	<i>An example hook argument to make() that redirects error messages to files.</i>
-------------------	---

Description

Most users do not need to micromanage hooks.

Usage

```
message_sink_hook(code)
```

Arguments

code code to run to build the target.

Value

A function that you can supply to the hook argument of [make\(\)](#).

See Also

[make\(\)](#), [silencer_hook\(\)](#), [output_sink_hook\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
# Test out the message sink hook on its own.
try(
  message_sink_hook({
    cat(1234)
    stop(5678)
  }),
  silent = FALSE
)
# Create a new workflow plan.
x <- drake_plan(loud = cat(1234), bad = stop(5678))
# Run the project. All messages should be suppressed.
try(make(x, hook = message_sink_hook), silent = FALSE)
})

## End(Not run)
```

missed

Report any import objects required by your drake_plan plan but missing from your workspace.

Description

Checks your workspace/environment and file system.

Usage

```
missed(config = drake::read_drake_config())
```

Arguments

config internal runtime parameter list produced by both [drake_config\(\)](#) and [make\(\)](#).

Value

Character vector of names of missing objects and files.

See Also

[outdated\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan)
  missed(config) # All the imported files and objects should be present.
  rm(reg1) # Remove an import dependency from you workspace.
  missed(config) # Should report that reg1 is missing.
})

## End(Not run)
```

new_cache	<i>Make a new drake cache.</i>
-----------	--------------------------------

Description

Uses the [storr_rds\(\)](#) function from the `storr` package.

Usage

```
new_cache(path = drake::default_cache_path(),
  verbose = drake::default_verbose(), type = NULL,
  short_hash_algo = drake::default_short_hash_algo(),
  long_hash_algo = drake::default_long_hash_algo(), ...,
  console_log_file = NULL)
```

Arguments

path	file path to the cache if the cache is a file system cache.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing.</code> 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
type	deprecated argument. Once stood for cache type. Use <code>storr</code> to customize your caches instead.
short_hash_algo	short hash algorithm for the cache. See default_short_hash_algo() and make()
long_hash_algo	long hash algorithm for the cache. See default_long_hash_algo() and make()
...	other arguments to the cache constructor
console_log_file	character scalar or NULL. If NULL, console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.

Value

A newly created drake cache as a storr object.

See Also

[default_short_hash_algo\(\)](#), [default_long_hash_algo\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine new_cache() side effects.", {
  clean(destroy = TRUE) # Should not be necessary.
  unlink("not_hidden", recursive = TRUE) # Should not be necessary.
  cache1 <- new_cache() # Creates a new hidden '.drake' folder.
  cache2 <- new_cache(path = "not_hidden", short_hash_algo = "md5")
  clean(destroy = TRUE, cache = cache2)
})

## End(Not run)
```

outdated

List the targets that are out of date.

Description

Outdated targets will be rebuilt in the next [make\(\)](#).

Usage

```
outdated(config = drake::read_drake_config(), make_imports = TRUE,
  do_prework = TRUE)
```

Arguments

config	option internal runtime parameter list produced with drake_config() . You must use a fresh config argument with an up-to-date config\$targets element that was never modified by hand. If needed, rerun drake_config() early and often. See the details in the help file for drake_config() .
make_imports	logical, whether to make the imports first. Set to FALSE to save some time and risk obsolete output.
do_prework,	whether to do the prework normally supplied to make() .

Details

outdated() is sensitive to the alternative triggers described at <https://ropenscilabs.github.io/drake-manual/debug.html>. # nolint For example, even if outdated(...) shows everything up to date, outdated(..., trigger = "always") will show all targets out of date. You must use a fresh config argument with an up-to-date config\$targets element that was never modified by hand. If needed, rerun drake_config() early and often. See the details in the help file for drake_config().

Value

Character vector of the names of outdated targets.

See Also

[drake_config\(\)](#), [missed\(\)](#), [drake_plan\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Recopute the config list early and often to have the
  # most current information. Do not modify the config list by hand.
  config <- drake_config(my_plan)
  outdated(config = config) # Which targets are out of date?
  config <- make(my_plan) # Run the projects, build the targets.
  # Now, everything should be up to date (no targets listed).
  outdated(config = config)
  # outdated() is sensitive to triggers.
  # See the debugging guide: https://ropenscilabs.github.io/drake-manual/debug.html # nolint
  config$trigger <- "always"
  outdated(config = config)
})

## End(Not run)
```

output_sink_hook	<i>An example hook argument to make() that redirects output messages to files.</i>
------------------	--

Description

Most users do not need to micromanage hooks.

Usage

```
output_sink_hook(code)
```

Arguments

code code to run to build the target.

Value

A function that you can supply to the hook argument of `make()`.

See Also

`make()`, `silencer_hook()`, `message_sink_hook()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
# Test out the output sink hook on its own.
try(
  output_sink_hook({
    cat(1234)
    stop(5678)
  }),
  silent = FALSE
)
# Create a new workflow plan.
x <- drake_plan(loud = cat(1234), bad = stop(5678))
# Run the project. Standard output (via cat() and print())
# should be suppressed, but messages should persist.
try(make(x, hook = output_sink_hook), silent = FALSE)
})

## End(Not run)
```

parallelism_choices *List the types of supported parallel computing in drake.*

Description

These are the possible values of the parallelism argument to `make()`.

Usage

```
parallelism_choices(distributed_only = FALSE)
```

Arguments

distributed_only
 logical, whether to return only the distributed backend types, such as Makefile
 and parLapply

Details

See the [high-performance computing guide](#) # nolint for details on the parallel backends.

Value

Character vector listing the types of parallel computing supported.

See Also

[make\(\)](#), [shell_file\(\)](#)

Examples

```
# See all the parallel computing options.
parallelism_choices()
# See just the distributed computing options.
parallelism_choices(distributed_only = TRUE)
```

plan_analyses	<i>Generate a workflow plan data frame to analyze multiple datasets using multiple methods of analysis.</i>
---------------	---

Description

Uses wildcards to create a new workflow plan data frame from a template data frame.

Usage

```
plan_analyses(plan, datasets)
```

Arguments

plan	workflow plan data frame of analysis methods. The commands in the command column must have the dataset__ wildcard where the datasets go. For example, one command could be <code>lm(dataset__)</code> . Then, the commands in the output will include <code>lm(your_dataset_1)</code> , <code>lm(your_dataset_2)</code> , etc.
datasets	workflow plan data frame with instructions to make the datasets.

Value

An evaluated workflow plan data frame of analysis targets.

See Also

[plan_summaries\(\)](#), [make\(\)](#), [drake_plan\(\)](#)

Examples

```
# Create the piece of the workflow plan for the datasets.
datasets <- drake_plan(
  small = simulate(5),
  large = simulate(50))
# Create a template for the analysis methods.
methods <- drake_plan(
  regression1 = reg1(dataset__),
  regression2 = reg2(dataset__))
# Evaluate the wildcards to create the part of the workflow plan
# encoding the analyses of the datasets.
ans <- plan_analyses(methods, datasets = datasets)
ans
# For the final workflow plan, row bind the pieces together.
my_plan <- rbind(datasets, ans)
my_plan
```

plan_summaries	<i>Generate a workflow plan data frame for summarizing multiple analyses of multiple datasets multiple ways.</i>
----------------	--

Description

Uses wildcards to create a new workflow plan data frame from a template data frame.

Usage

```
plan_summaries(plan, analyses, datasets, gather = rep("list",
  nrow(plan)))
```

Arguments

plan	workflow plan data frame with commands for the summaries. Use the analysis__ and dataset__ wildcards just like the dataset__ wildcard in plan_analyses() .
analyses	workflow plan data frame of analysis instructions
datasets	workflow plan data frame with instructions to make or import the datasets.
gather	Character vector, names of functions to gather the summaries. If not NULL, the length must be the number of rows in the plan. See the gather_plan() function for more.

Value

An evaluated workflow plan data frame of instructions for computing summaries of analyses and datasets. analyses of multiple datasets in multiple ways.

See Also

[plan_analyses\(\)](#), [make\(\)](#), [drake_plan\(\)](#)

Examples

```

# Create the part of the workflow plan data frame for the datasets.
datasets <- drake_plan(
  small = simulate(5),
  large = simulate(50))
# Create a template workflow plan containing the analysis methods.
methods <- drake_plan(
  regression1 = reg1(dataset__),
  regression2 = reg2(dataset__))
# Generate the part of the workflow plan to analyze the datasets.
analyses <- plan_analyses(methods, datasets = datasets)
# Create a template workflow plan dataset with the
# types of summaries you want.
summary_types <- drake_plan(
  summ = summary(analysis__),
  coef = coefficients(analysis__))
# Evaluate the appropriate wildcards to encode the summary targets.
plan_summaries(summary_types, analyses, datasets, gather = NULL)
plan_summaries(summary_types, analyses, datasets)
plan_summaries(summary_types, analyses, datasets, gather = "list")
summs <- plan_summaries(
  summary_types, analyses, datasets, gather = c("list", "rbind"))
# For the final workflow plan, row bind the pieces together.
my_plan <- rbind(datasets, analyses, summs)
my_plan

```

predict_load_balancing

Predict the load balancing of the next call to `make()` for non-staged parallel backends.

Description

Take the past recorded runtimes times from `build_times()` and use them to predict how the targets will be distributed among the available workers in the next `make()`.

Usage

```

predict_load_balancing(config = drake::read_drake_config(),
  targets = NULL, from_scratch = FALSE, targets_only = FALSE,
  future_jobs = NULL, digits = NULL, jobs = 1,
  known_times = numeric(0), default_time = 0, warn = TRUE)

```

Arguments

config	option internal runtime parameter list of produced by both <code>make()</code> and <code>drake_config()</code> .
targets	Character vector, names of targets. Predict the runtime of building these targets plus dependencies. Defaults to all targets.

from_scratch	logical, whether to predict a <code>make()</code> build from scratch or to take into account the fact that some targets may be already up to date and therefore skipped.
targets_only	logical, whether to factor in just the targets into the calculations or use the build times for everything, including the imports
future_jobs	deprecated
digits	deprecated
jobs	the <code>jobs</code> argument of your next planned <code>make()</code> . How many targets to do you plan to have running simultaneously?
known_times	a named numeric vector with targets/imports as names and values as hypothetical runtimes in seconds. Use this argument to overwrite any of the existing build times or the <code>default_time</code> .
default_time	number of seconds to assume for any target or import with no recorded runtime (from <code>build_times()</code>) or anything in <code>known_times</code> .
warn	logical, whether to warn the user about any targets with no available runtime, either in <code>known_times</code> or <code>build_times()</code> . The times for these targets default to <code>default_time</code> .

Details

The prediction is only a rough approximation. The algorithm that emulates the workers is not perfect, and it may turn out to perform poorly in some edge cases. It assumes you are using one of the backends with persistent workers ("`mclapply`", "`parLapply`", or "`future_lapply`"), though the transient worker backends "`future`" and "`Makefile`" should be similar. The prediction does not apply to staged parallelism backends such as `make(parallelism = "mclapply_staged")` or `make(parallelism = "parLapply_staged")`. The function also assumes that the overhead of initializing `make()` and any workers is negligible. Use the `default_time` and `known_times` arguments to adjust the assumptions as needed.

Value

A list with (1) the total runtime and (2) a list of the names of the targets assigned to each worker. For each worker, targets are listed in the order they are assigned.

See Also

`predict_runtime()`, `build_times()`, `make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- make(my_plan) # Run the project, build the targets.
  # The predictions use the cached build times of the targets,
  # but if you expect your target runtimes
  # to be different, you can specify them (in seconds).
  known_times <- c(5, rep(7200, nrow(my_plan) - 1))
  names(known_times) <- c(file_store("report.md"), my_plan$target[-1])
})
```



```

known_times
# Predict the runtime
predict_runtime(
  config,
  jobs = 7,
  from_scratch = TRUE,
  known_times = known_times
)
predict_runtime(
  config,
  jobs = 8,
  from_scratch = TRUE,
  known_times = known_times
)
# Why isn't 8 jobs any better?
# 8 would be a good guess based on the layout of the workflow graph.
# It's because of load balancing.
# Below, each row is a persistent worker.
balance <- predict_load_balancing(
  config,
  jobs = 7,
  from_scratch = TRUE,
  known_times = known_times,
  targets_only = TRUE
)
balance
max(balance$time)
# Each worker gets 2 rate-limiting targets.
balance$time
# Even if you add another worker, there will be still be workers
# with two heavy targets.
})

## End(Not run)

```

predict_runtime	<i>Predict the elapsed runtime of the next call to make() for non-staged parallel backends.</i>
-----------------	---

Description

Take the past recorded runtimes times from `build_times()` and use them to predict how the targets will be distributed among the available workers in the next `make()`. Then, predict the overall runtime to be the runtime of the slowest (busiest) workers. See Details for some caveats.

Usage

```

predict_runtime(config = drake::read_drake_config(), targets = NULL,
  from_scratch = FALSE, targets_only = FALSE, future_jobs = NULL,
  digits = NULL, jobs = 1, known_times = numeric(0),
  default_time = 0, warn = TRUE)

```

Arguments

config	option internal runtime parameter list of produced by both <code>make()</code> and <code>drake_config()</code> .
targets	Character vector, names of targets. Predict the runtime of building these targets plus dependencies. Defaults to all targets.
from_scratch	logical, whether to predict a <code>make()</code> build from scratch or to take into account the fact that some targets may be already up to date and therefore skipped.
targets_only	logical, whether to factor in just the targets into the calculations or use the build times for everything, including the imports
future_jobs	deprecated
digits	deprecated
jobs	the <code>jobs</code> argument of your next planned <code>make()</code> . How many targets to do you plan to have running simultaneously?
known_times	a named numeric vector with targets/imports as names and values as hypothetical runtimes in seconds. Use this argument to overwrite any of the existing build times or the <code>default_time</code> .
default_time	number of seconds to assume for any target or import with no recorded runtime (from <code>build_times()</code>) or anything in <code>known_times</code> .
warn	logical, whether to warn the user about any targets with no available runtime, either in <code>known_times</code> or <code>build_times()</code> . The times for these targets default to <code>default_time</code> .

Details

The prediction is only a rough approximation. The algorithm that emulates the workers is not perfect, and it may turn out to perform poorly in some edge cases. It also assumes you are using one of the backends with persistent workers ("mclapply", "parLapply", or "future_lapply"), though the transient worker backends "future" and "Makefile" should be similar. The prediction does not apply to staged parallelism backends such as `make(parallelism = "mclapply_staged")` or `make(parallelism = "parLapply_staged")`. The function also assumes that the overhead of initializing `make()` and any workers is negligible. Use the `default_time` and `known_times` arguments to adjust the assumptions as needed.

See Also

[predict_load_balancing\(\)](#), [build_times\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- make(my_plan) # Run the project, build the targets.
  # The predictions use the cached build times of the targets,
  # but if you expect your target runtimes
  # to be different, you can specify them (in seconds).
  known_times <- c(5, rep(7200, nrow(my_plan) - 1))
  names(known_times) <- c(file_store("report.md"), my_plan$target[-1])
})
```

```

known_times
# Predict the runtime
predict_runtime(
  config,
  jobs = 7,
  from_scratch = TRUE,
  known_times = known_times
)
predict_runtime(
  config,
  jobs = 8,
  from_scratch = TRUE,
  known_times = known_times
)
# Why isn't 8 jobs any better?
# 8 would be a good guess based on the layout of the workflow graph.
# It's because of load balancing.
# Below, each row is a persistent worker.
balance <- predict_load_balancing(
  config,
  jobs = 7,
  from_scratch = TRUE,
  known_times = known_times,
  targets_only = TRUE
)
balance
max(balance$time)
# Each worker gets 2 rate-limiting targets.
balance$time
# Even if you add another worker, there will be still be workers
# with two heavy targets.
})

## End(Not run)

```

progress

Get the build progress of your targets during a `make()`.

Description

Objects that drake imported, built, or attempted to build are listed as "finished" or "in progress". Skipped objects are not listed.

Usage

```

progress(..., list = character(0), no_imported_objects = FALSE,
  imported_files_only = logical(0), path = getwd(), search = TRUE,
  cache = drake::get_cache(path = path, search = search, verbose =
  verbose), verbose = drake::default_verbose(), jobs = 1)

```

Arguments

...	objects to load from the cache, as names (unquoted) or character strings (quoted). Similar to ... in <code>remove()</code> and <code>rm()</code> .
list	character vector naming objects to be loaded from the cache. Similar to the list argument of <code>remove()</code> .
no_imported_objects	logical, whether to only return information about imported files and targets with commands (i.e. whether to ignore imported objects that are not files).
imported_files_only	logical, deprecated. Same as <code>no_imported_objects</code> . Use the <code>no_imported_objects</code> argument instead.
path	Root directory of the drake project, or if <code>search</code> is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
jobs	number of jobs/workers for parallel processing

Value

The build progress of each target reached by the current `make()` so far.

See Also

`diagnose()`, `drake_session()`, `built()`, `imported()`, `readd()`, `drake_plan()`, `make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  # Watch the changing progress() as make() is running.
  progress() # List all the targets reached so far.
  progress(small, large) # Just see the progress of some targets.
  progress(list = c("small", "large")) # Same as above.
  progress(no_imported_objects = TRUE) # Ignore imported R objects.
})

## End(Not run)
```

prune_drake_graph	<i>Prune the dependency network of your project.</i>
-------------------	--

Description

igraph objects are used internally to represent the dependency network of your workflow. See `drake_config(my_plan)$graph` from the `mtcars` example.

Usage

```
prune_drake_graph(graph, to = igraph::V(graph)$name, jobs = 1)
```

Arguments

<code>graph</code>	An igraph object to be pruned.
<code>to</code>	Character vector, names of the vertices that draw the line for pruning. The pruning process removes all vertices downstream of <code>to</code> .
<code>jobs</code>	Number of jobs for light parallelism (on non-Windows machines).

Details

For a supplied graph, take the subgraph of all combined incoming paths to the vertices in `to`. In other words, remove the vertices after `to` from the graph.

Value

A pruned igraph object representing the dependency network of the workflow.

See Also

[build_drake_graph\(\)](#), [drake_config\(\)](#), [make\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Build the igraph object representing the workflow dependency network.
  # You could also use drake_config(my_plan)$graph
  graph <- build_drake_graph(my_plan)
  # The default plotting is not the greatest,
  # but you will get the idea.
  # plot(graph) # nolint
  # Prune the graph: that is, remove the nodes downstream
  # from 'small' and 'large'
  pruned <- prune_drake_graph(graph = graph, to = c("small", "large"))
  # plot(pruned) # nolint
})
```

```
## End(Not run)
```

readd	<i>Read and return a drake target/import from the cache.</i>
-------	--

Description

`readd()` returns an object from the cache, and `loadadd()` loads one or more objects from the cache into your environment or session. These objects are usually targets built by `make()`.

Usage

```
readd(target, character_only = FALSE, path = getwd(), search = TRUE,
       cache = drake::get_cache(path = path, search = search, verbose =
       verbose), namespace = NULL, verbose = drake::default_verbose(),
       show_source = FALSE)
```

```
loadadd(..., list = character(0), imported_only = FALSE,
        path = getwd(), search = TRUE, cache = drake::get_cache(path =
        path, search = search, verbose = verbose), namespace = NULL,
        envir = parent.frame(), jobs = 1,
        verbose = drake::default_verbose(), deps = FALSE, lazy = "eager",
        graph = NULL, replace = TRUE, show_source = FALSE)
```

Arguments

target	If <code>character_only</code> is TRUE, then <code>target</code> is a character string naming the object to read. Otherwise, <code>target</code> is an unquoted symbol with the name of the object.
character_only	logical, whether name should be treated as a character or a symbol (just like <code>character.only</code> in <code>library()</code>).
path	Root directory of the drake project, or if <code>search</code> is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
namespace	optional character string, name of the storrr namespace to read from.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

show_source	logical, option to show the command that produced the target or indicate that the object was imported (using <code>show_source()</code>).
...	targets to load from the cache: as names (symbols), character strings, or dplyr-style tidyselect commands such as <code>starts_with()</code> .
list	character vector naming targets to be loaded from the cache. Similar to the <code>list</code> argument of <code>remove()</code> .
imported_only	logical, whether only imported objects should be loaded.
envir	environment to load objects into. Defaults to the calling environment (current workspace).
jobs	number of parallel jobs for loading objects. On non-Windows systems, the loading process for multiple objects can be lightly parallelized via <code>parallel::mclapply()</code> . just set <code>jobs</code> to be an integer greater than 1. On Windows, <code>jobs</code> is automatically demoted to 1.
deps	logical, whether to load any cached dependencies of the targets instead of the targets themselves. This is useful if you know your target failed and you want to debug the command in an interactive session with the dependencies in your workspace. One caveat: to find the dependencies, <code>loadd()</code> uses information that was stored in a <code>drake_config()</code> list and cached during the last <code>make()</code> . That means you need to have already called <code>make()</code> if you set <code>deps</code> to <code>TRUE</code> .
lazy	either a string or a logical. Choices: <ul style="list-style-type: none"> • "eager": no lazy loading. The target is loaded right away with <code>assign()</code>. • "promise": lazy loading with <code>delayedAssign()</code> • "bind": lazy loading with active bindings: <code>bindr::populate_env()</code>. • <code>TRUE</code>: same as "promise". • <code>FALSE</code>: same as "eager".
graph	optional igraph object, representation of the workflow network for getting dependencies if <code>deps</code> is <code>TRUE</code> . If none is supplied, it will be read from the cache.
replace	logical. If <code>FALSE</code> , items already in your environment will not be replaced.

Details

There are two uses for the `loadd()` and `readd()` functions:

1. Exploring the results outside the `drake/make()` pipeline. When you call `make()` to run your project, `drake` puts the targets in a cache, usually a folder called `.drake`. You may want to inspect the targets afterwards, possibly in an interactive R session. However, the files in the `.drake` folder are organized in a special format created by the `storr` package, which is not exactly human-readable. To retrieve a target for manual viewing, use `readd()`. To load one or more targets into your session, use `loadd()`.
2. In `knitr` / R Markdown reports. You can borrow `drake` targets in your active code chunks if you have the right calls to `loadd()` and `readd()`. These reports can either run outside the `drake` pipeline, or better yet, as part of the pipeline itself. If you call `knitr_in("your_report.Rmd")` inside a `drake_plan()` command, then `make()` will scan "your_report.Rmd" for calls to `loadd()` and `readd()` in active code chunks, and then treat those loaded targets as dependencies. That way, `make()` will automatically (re)run the report if those dependencies change.

Please do not put calls to `loadadd()` or `readd()` inside your custom (imported) functions or the commands in your `drake_plan()`. This create confusion inside `make()`, which has its own ways of interacting with the cache.

Value

The cached value of the target.

NULL

See Also

`cached()`, `built()`, `imported()`, `drake_plan()`, `make()`

`cached()`, `built()`, `imported()`, `drake_plan()`, `make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  readd(reg1) # Return imported object 'reg1' from the cache.
  readd(small) # Return targets 'small' from the cache.
  readd("large", character_only = TRUE) # Return 'large' from the cache.
  # For external files, only the fingerprint/hash is stored.
  readd(file_store("report.md"), character_only = TRUE)
})

## End(Not run)
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the projects, build the targets.
  loadadd(small) # Load target 'small' into your workspace.
  small
  # For many targets, you can parallelize loadadd()
  # using the 'jobs' argument.
  loadadd(list = c("small", "large"), jobs = 2)
  ls()
  # How about tidyselect?
  loadadd(starts_with("summ"))
  ls()
  # Load the dependencies of the target, coef_regression2_small
  loadadd(coef_regression2_small, deps = TRUE)
  ls()
  # Load all the imported objects/functions.
  # Note: loadadd() excludes foreign imports
  # (R objects not originally defined in `envir`
  # when `make()` last imported them).
  loadadd(imported_only = TRUE)
  ls()
  # Load all the targets listed in the workflow plan
```



```

# of the previous `make()`.
# Be sure your computer has enough memory.
load()
ls()
# With files, you just get the fingerprint.
load(list = file_store("report.md"))
ls() # Should include "\"report.md\"".
get(file_store("report.md"))
})

## End(Not run)

```

read_drake_config *Read the cached [drake_config\(\)](#) list from the last [make\(\)](#).*

Description

See [drake_config\(\)](#) for more information about drake's internal runtime configuration parameter list.

Usage

```

read_drake_config(path = getwd(), search = TRUE, cache = NULL,
  verbose = drake::default_verbose(), jobs = 1,
  envir = parent.frame())

```

Arguments

path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing.</code> 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
jobs	number of jobs for light parallelism. Supports 1 job only on Windows.
envir	Optional environment to fill in if <code>config\$envir</code> was not cached. Defaults to your workspace.

Value

The cached master internal configuration list of the last `make()`.

See Also

`make()`

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  # Retrieve the master internal configuration list from the cache.
  read_drake_config()
})

## End(Not run)
```

read_drake_graph	<i>Read the igraph dependency network from your last attempted call to <code>make()</code>.</i>
------------------	---

Description

To build the targets, `make()` advances along the graph from leaves to roots.

Usage

```
read_drake_graph(path = getwd(), search = TRUE, cache = NULL,
  verbose = drake::default_verbose())
```

Arguments

path	Root directory of the drake project, or if <code>search</code> is <code>TRUE</code> , either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If <code>TRUE</code> , search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See <code>new_cache()</code> . If supplied, <code>path</code> and <code>search</code> are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of <code>verbose</code> for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

Value

An igraph object representing the dependency network of the workflow.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  # Retrieve the igraph network from the cache.
  g <- read_drake_graph()
  class(g) # "igraph"
})

## End(Not run)
```

read_drake_plan	<i>Read the workflow plan from your last attempted call to make().</i>
-----------------	--

Description

Uses the cache.

Usage

```
read_drake_plan(path = getwd(), search = TRUE, cache = NULL,
  verbose = drake::default_verbose())
```

Arguments

path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

Value

A workflow plan data frame.

See Also[read_drake_config\(\)](#)**Examples**

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build the targets.
  read_drake_plan() # Retrieve the workflow plan data frame from the cache.
})

## End(Not run)
```

read_drake_seed	<i>Read the pseudo-random number generator seed of the project.</i>
-----------------	---

Description

When a project is created with `make()` or `drake_config()`, the project's pseudo-random number generator seed is cached. Then, unless the cache is destroyed, the seeds of all the targets will deterministically depend on this one central seed. That way, reproducibility is protected, even under randomness.

Usage

```
read_drake_seed(path = getwd(), search = TRUE, cache = NULL,
  verbose = drake::default_verbose())
```

Arguments

path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.
cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.

Value

An integer vector.

See Also

[read_drake_config\(\)](#)

Examples

```
cache <- storr::storr_environment() # Just for the examples.
my_plan <- drake_plan(
  target1 = sqrt(1234),
  target2 = rnorm(n = 1, mean = target1)
)
tmp <- runif(1) # Needed to get a .Random.seed, but not for drake.
digest::digest(.Random.seed) # Fingerprint of the current R session's seed.
make(my_plan, cache = cache) # Run the project, build the targets.
digest::digest(.Random.seed) # Your session's seed did not change.
# Drake uses a hard-coded seed if you do not supply one.
read_drake_seed(cache = cache)
readd(target2, cache = cache) # Randomly-generated target data.
clean(target2, cache = cache) # Oops, I removed the data!
tmp <- runif(1) # Maybe the R session's seed also changed.
make(my_plan, cache = cache) # Rebuild target2.
# Same as before:
read_drake_seed(cache = cache)
readd(target2, cache = cache)
# You can also supply a seed.
# If your project already exists, it must agree with the project's
# preexisting seed (default: 0)
clean(target2, cache = cache)
make(my_plan, cache = cache, seed = 0)
read_drake_seed(cache = cache)
readd(target2, cache = cache)
# If you want to supply a different seed than 0,
# you need to destroy the cache and start over first.
clean(destroy = TRUE, cache = cache)
cache <- storr::storr_environment() # Just for the examples.
make(my_plan, cache = cache, seed = 1234)
read_drake_seed(cache = cache)
readd(target2, cache = cache)
```

recover_cache

Load an existing drake files system cache if it exists or create a new one otherwise.

Description

Does not work with in-memory caches such as [storr_environment\(\)](#).

Usage

```
recover_cache(path = drake::default_cache_path(),
  short_hash_algo = drake::default_short_hash_algo(),
  long_hash_algo = drake::default_long_hash_algo(), force = FALSE,
  verbose = drake::default_verbose(), fetch_cache = NULL,
  console_log_file = NULL)
```

Arguments

path	file path of the cache
short_hash_algo	short hash algorithm for the cache. See default_short_hash_algo() and make()
long_hash_algo	long hash algorithm for the cache. See default_long_hash_algo() and make()
force	logical, whether to load the cache despite any back compatibility issues with the running version of drake.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" =</code> 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.
fetch_cache	character vector containing lines of code. The purpose of this code is to fetch the <code>storr</code> cache with a command like storr_rds() or storr_dbi() , but customized. This feature is experimental. It will turn out to be necessary if you are using both custom non-RDS caches and distributed parallelism (<code>parallelism = "future_lapply"</code> or <code>"Makefile"</code>) because the distributed R sessions need to know how to load the cache.
console_log_file	character scalar or NULL. If NULL, console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.

Value

A drake/storr cache.

See Also

[new_cache\(\)](#), [this_cache\(\)](#), [get_cache\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  clean(destroy = TRUE)
```

```

load_mtcars_example() # Get the code with drake_example("mtcars").
make(my_plan) # Run the project, build all the targets.
x <- recover_cache(".drake") # Recover the project's storr cache.
})

## End(Not run)

```

reduce_by

Reduce multiple groupings of targets

Description

Perform several calls to `reduce_plan()` based on groupings from columns in the plan, and then row-bind the new targets to the plan.

Usage

```

reduce_by(plan, ..., prefix = "target", begin = "", op = " + ",
  end = "", pairwise = TRUE)

```

Arguments

plan	workflow plan data frame of prespecified targets
...	Symbols, columns of plan to define target groupings passed to <code>dplyr::group_by()</code> . A <code>reduce_plan()</code> call is applied for each grouping. Groupings with all NAs in the selector variables are ignored.
prefix	character, prefix for naming the new targets. Suffixes are generated from the values of the columns specified in
begin	character, code to place at the beginning of each step in the reduction
op	binary operator to apply in the reduction
end	character, code to place at the end of each step in the reduction
pairwise	logical, whether to create multiple new targets, one for each pair/step in the reduction (TRUE), or to do the reduction all in one command.

See Also

`reduce_plan`, `gather_plan`, `gather_by`

Examples

```

plan <- drake_plan(
  data = get_data(),
  informal_look = inspect_data(data, mu = mu__),
  bayesian_model = bayesian_model_fit(data, prior_mu = mu__)
)
plan <- evaluate_plan(plan, rules = list(mu__ = 1:2), trace = TRUE)
gather_by(plan, mu___from, gather = "dplyr::bind_rows")

```

```
gather_by(plan, mu__, mu___from, prefix = "x")
reduce_by(plan, mu___from, begin = "list(", end = ")", op = ", ")
reduce_by(plan, mu__, mu___from)
```

 reduce_plan

Write commands to reduce several targets down to one.

Description

Creates a new workflow plan data frame with the commands to do a reduction (i.e. to repeatedly apply a binary operator to pairs of targets to produce one target).

Usage

```
reduce_plan(plan = NULL, target = "target", begin = "", op = " + ",
  end = "", pairwise = TRUE)
```

Arguments

plan	workflow plan data frame of prespecified targets
target	name of the new reduced target
begin	character, code to place at the beginning of each step in the reduction
op	binary operator to apply in the reduction
end	character, code to place at the end of each step in the reduction
pairwise	logical, whether to create multiple new targets, one for each pair/step in the reduction (TRUE), or to do the reduction all in one command.

Value

A workflow plan data frame that aggregates multiple prespecified targets into one additional target downstream.

Examples

```
# Workflow plan for datasets:
x_plan <- evaluate_plan(
  drake_plan(x = VALUE),
  wildcard = "VALUE",
  values = 1:8
)
# Create a new target from the sum of the others.
reduce_plan(x_plan, target = "x_sum", pairwise = FALSE)
# For memory efficiency and parallel computing,
# reduce pairwise:
reduce_plan(x_plan, target = "x_sum", pairwise = TRUE)
# Optionally define your own function and use it as the
# binary operator in the reduction.
```



```
x_plan <- evaluate_plan(
  drake_plan(x = VALUE),
  wildcard = "VALUE",
  values = 1:9
)
x_plan
reduce_plan(
  x_plan, target = "x_sum", pairwise = TRUE,
  begin = "fun(", op = ", ", end = ")"
)
```

render_drake_ggraph *Render a static ggplot2/ggraph visualization from drake_graph_info() output.*

Description

This function requires packages ggplot2 and ggraph. Install them with `install.packages(c("ggplot2", "ggraph"))`.

Usage

```
render_drake_ggraph(graph_info, main = graph_info$default_title)
```

Arguments

graph_info	list of data frames generated by <code>drake_graph_info()</code> . There should be 3 data frames: nodes, edges, and legend_nodes.
main	character string, title of the graph

Value

A ggplot2 object, which you can modify with more layers, show with `plot()`, or save as a file with `ggsave()`.

See Also

[vis_drake_graph\(\)](#), [sankey_drake_graph\(\)](#), [drake_ggraph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Instead of jumping right to vis_drake_graph(), get the data frames
  # of nodes, edges, and legend nodes.
  config <- drake_config(my_plan) # Internal configuration list
  drake_ggraph(config) # Jump straight to the static graph.
  # Get the node and edge info that vis_drake_graph() just plotted:
  graph <- drake_graph_info(config)
```

```
render_drake_ggraph(graph)
})

## End(Not run)
```

render_drake_graph *Render a visualization using the data frames generated by drake_graph_info().*

Description

This function is called inside `vis_drake_graph()`, which typical users call more often.

Usage

```
render_drake_graph(graph_info, file = character(0),
  layout = "layout_with_sugiyama", direction = "LR", hover = TRUE,
  main = graph_info$default_title, selfcontained = FALSE,
  navigationButtons = TRUE, ncol_legend = 1, collapse = TRUE, ...)
```

Arguments

graph_info	list of data frames generated by <code>drake_graph_info()</code> . There should be 3 data frames: nodes, edges, and legend_nodes.
file	Name of a file to save the graph. If NULL or <code>character(0)</code> , no file is saved and the graph is rendered and displayed within R. If the file ends in a <code>.png</code> , <code>.jpg</code> , <code>.jpeg</code> , or <code>.pdf</code> extension, then a static image will be saved. In this case, the <code>webshot</code> package and <code>PhantomJS</code> are required: <code>install.packages("webshot"); webshot::install_phantomjs()</code> . If the file does not end in a <code>.png</code> , <code>.jpg</code> , <code>.jpeg</code> , or <code>.pdf</code> extension, an HTML file will be saved, and you can open the interactive graph using a web browser.
layout	name of an <code>igraph</code> layout to use, such as <code>'layout_with_sugiyama'</code> or <code>'layout_as_tree'</code> . Be careful with <code>'layout_as_tree'</code> : the graph is a directed acyclic graph, but not necessarily a tree.
direction	an argument to <code>visNetwork::visHierarchicalLayout()</code> indicating the direction of the graph. Options include <code>'LR'</code> , <code>'RL'</code> , <code>'DU'</code> , and <code>'UD'</code> . At the time of writing this, the letters must be capitalized, but this may not always be the case ;) in the future.
hover	logical, whether to show the command that generated the target when you hover over a node with the mouse. For imports, the label does not change with hovering.
main	character string, title of the graph
selfcontained	logical, whether to save the file as a self-contained HTML file (with external resources base64 encoded) or a file with external resources placed in an adjacent directory. If TRUE, <code>pandoc</code> is required. The <code>selfcontained</code> argument only applies to HTML files. In other words, if <code>file</code> is a PNG, PDF, or JPEG file, for instance, the point is moot.

navigationButtons	logical, whether to add navigation buttons with <code>visNetwork::visInteraction(navigationButtons =</code>
ncol_legend	number of columns in the legend nodes. To remove the legend entirely, set <code>ncol_legend</code> to <code>NULL</code> or <code>0</code> .
collapse	logical, whether to allow nodes to collapse if you double click on them. Analogous to <code>visNetwork::visOptions(collapse = TRUE)</code> or <code>visNetwork::visOptions(collapse = TRU</code>
...	arguments passed to <code>visNetwork()</code> .

Value

A `visNetwork` graph.

See Also

[vis_drake_graph\(\)](#), [sankey_drake_graph\(\)](#), [drake_ggraph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Instead of jumping right to vis_drake_graph(), get the data frames
  # of nodes, edges, and legend nodes.
  config <- drake_config(my_plan) # Internal configuration list
  vis_drake_graph(config) # Jump straight to the interactive graph.
  # Get the node and edge info that vis_drake_graph() just plotted:
  graph <- drake_graph_info(config)
  # You can pass the data frames right to render_drake_graph()
  # (as in vis_drake_graph()) or you can create
  # your own custom visNetwork graph.
  render_drake_graph(graph, width = '100%') # Width is passed to visNetwork.
  # Optionally visualize clusters.
  config$plan$large_data <- grepl("large", config$plan$target)
  graph <- drake_graph_info(
    config, group = "large_data", clusters = c(TRUE, FALSE))
  render_drake_graph(graph)
  # You can even use clusters given to you for free in the `graph$nodes`
  # data frame.
  graph <- drake_graph_info(
    config, group = "status", clusters = "imported")
  render_drake_graph(graph)
})

## End(Not run)
```

render_sankey_drake_graph

Render a Sankey diagram from `drake_graph_info()`.

Description

This function is called inside `sankey_drake_graph()`, which typical users call more often. A legend is unfortunately unavailable for the graph itself (<https://github.com/christophergandrud/networkD3/issues/240>) but you can see what all the colors mean with `visNetwork::visNetwork(drake::legend_nodes`

Usage

```
render_sankey_drake_graph(graph_info, file = character(0),
  selfcontained = FALSE, ...)
```

Arguments

<code>graph_info</code>	list of data frames generated by <code>drake_graph_info()</code> . There should be 3 data frames: nodes, edges, and legend_nodes.
<code>file</code>	Name of a file to save the graph. If NULL or <code>character(0)</code> , no file is saved and the graph is rendered and displayed within R. If the file ends in a <code>.png</code> , <code>.jpg</code> , <code>.jpeg</code> , or <code>.pdf</code> extension, then a static image will be saved. In this case, the <code>webshot</code> package and PhantomJS are required: <code>install.packages("webshot"); webshot::install_phantomjs()</code> . If the file does not end in a <code>.png</code> , <code>.jpg</code> , <code>.jpeg</code> , or <code>.pdf</code> extension, an HTML file will be saved, and you can open the interactive graph using a web browser.
<code>selfcontained</code>	logical, whether to save the file as a self-contained HTML file (with external resources base64 encoded) or a file with external resources placed in an adjacent directory. If TRUE, <code>pandoc</code> is required.
<code>...</code>	arguments passed to <code>networkD3::sankeyNetwork()</code> .

Value

A `visNetwork` graph.

See Also

[sankey_drake_graph\(\)](#), [vis_drake_graph\(\)](#), [drake_ggraph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Instead of jumping right to sankey_drake_graph(), get the data frames
  # of nodes, edges, and legend nodes.
  config <- drake_config(my_plan) # Internal configuration list
  sankey_drake_graph(config) # Jump straight to the interactive graph.
```

```

# Show the legend separately.
visNetwork::visNetwork(nodes = drake::legend_nodes())
# Get the node and edge info that sankey_drake_graph() just plotted:
graph <- drake_graph_info(config)
# You can pass the data frames right to render_sankey_drake_graph()
# (as in sankey_drake_graph()) or you can create
# your own custom visNetwork graph.
render_sankey_drake_graph(graph, width = '100%') # Width is passed to visNetwork.
# Optionally visualize clusters.
config$plan$large_data <- grepl("large", config$plan$target)
graph <- drake_graph_info(
  config, group = "large_data", clusters = c(TRUE, FALSE))
render_sankey_drake_graph(graph)
# You can even use clusters given to you for free in the `graph$nodes`
# data frame.
graph <- drake_graph_info(
  config, group = "status", clusters = "imported")
render_sankey_drake_graph(graph)
})

## End(Not run)

```

rescue_cache

Try to repair a drake cache that is prone to throwing storr-related errors.

Description

Sometimes, storr caches may have dangling orphaned files that prevent you from loading or cleaning. This function tries to remove those files so you can use the cache normally again.

Usage

```

rescue_cache(targets = NULL, path = getwd(), search = TRUE,
  verbose = drake::default_verbose(), force = FALSE,
  cache = drake::get_cache(path = path, search = search, verbose =
  verbose, force = force), jobs = 1, garbage_collection = FALSE)

```

Arguments

targets	Character vector, names of the targets to rescue. As with many other drake utility functions, the word target is defined generally in this case, encompassing imports as well as true targets. If targets is NULL, everything in the cache is rescued.
path	Root directory of the drake project, or if search is TRUE, either the project root or a subdirectory of the project. Ignored if a cache is supplied.
search	logical. If TRUE, search parent directories to find the nearest drake cache. Otherwise, look in the current working directory only. Ignored if a cache is supplied.

verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = 0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
force	logical, whether to load the cache despite any back compatibility issues with the running version of drake.
cache	a <code>storr</code> cache object
jobs	number of jobs for light parallelism (disabled on Windows)
garbage_collection	logical, whether to do garbage collection as a final step. See <code>drake_gc()</code> and <code>clean()</code> for details.

Value

The rescued drake/storr cache.

See Also

[get_cache\(\)](#), [cached\(\)](#), [drake_gc\(\)](#), [clean\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  make(my_plan) # Run the project, build targets. This creates the cache.
  # Remove dangling cache files that could cause errors.
  rescue_cache(jobs = 2)
  # Alternatively, just rescue targets 'small' and 'large'.
  # Rescuing specific targets is usually faster.
  rescue_cache(targets = c("small", "large"))
})

## End(Not run)
```

r_recipe_wildcard	<i>Show the R recipe wildcard for <code>make(..., parallelism = "Makefile")</code>.</i>
-------------------	---

Description

Relevant to "Makefile" parallelism only.

Usage

```
r_recipe_wildcard()
```

Value

The R recipe wildcard.

See Also

[default_recipe_command\(\)](#)

Examples

```
r_recipe_wildcard()
```

`sankey_drake_graph` *Show a Sankey graph of your drake project.*

Description

To save time for repeated plotting, this function is divided into [drake_graph_info\(\)](#) and [render_sankey_drake_graph\(\)](#). A legend is unfortunately unavailable for the graph itself (<https://github.com/christophergandrud/networkD3/issues/240>) but you can see what all the colors mean with `visNetwork::visNetwork(drake::legend_nodes`

Usage

```
sankey_drake_graph(config = drake::read_drake_config(),
  file = character(0), selfcontained = FALSE, build_times = "build",
  digits = 3, targets_only = FALSE, from = NULL, mode = c("out",
  "in", "all"), order = NULL, subset = NULL, make_imports = TRUE,
  from_scratch = FALSE, group = NULL, clusters = NULL,
  show_output_files = TRUE, ...)
```

Arguments

<code>config</code>	a drake_config() configuration list. You can get one as a return value from make() as well.
<code>file</code>	Name of a file to save the graph. If <code>NULL</code> or <code>character(0)</code> , no file is saved and the graph is rendered and displayed within R. If the file ends in a <code>.png</code> , <code>.jpg</code> , <code>.jpeg</code> , or <code>.pdf</code> extension, then a static image will be saved. In this case, the <code>webshot</code> package and <code>PhantomJS</code> are required: <code>install.packages("webshot"); webshot::install_p</code> If the file does not end in a <code>.png</code> , <code>.jpg</code> , <code>.jpeg</code> , or <code>.pdf</code> extension, an HTML file will be saved, and you can open the interactive graph using a web browser.
<code>selfcontained</code>	logical, whether to save the file as a self-contained HTML file (with external resources base64 encoded) or a file with external resources placed in an adjacent directory. If <code>TRUE</code> , <code>pandoc</code> is required.

build_times	character string or logical. If character, the choices are 1. "build": runtime of the command plus the time it take to store the target or import. 2. "command": just the runtime of the command. 3. "none": no build times. If logical, build_times selects whether to show the times from "build_times(..., type = "build")" or use no build times at all. See build_times() for details.
digits	number of digits for rounding the build times
targets_only	logical, whether to skip the imports and only include the targets in the workflow plan.
from	Optional collection of target/import names. If from is nonempty, the graph will restrict itself to a neighborhood of from. Control the neighborhood with mode and order.
mode	Which direction to branch out in the graph to create a neighborhood around from. Use "in" to go upstream, "out" to go downstream, and "all" to go both ways and disregard edge direction altogether.
order	How far to branch out to create a neighborhood around from. Defaults to as far as possible. If a target is in the neighborhood, then so are all of its custom file_out() files if show_output_files is TRUE. That means the actual graph order may be slightly greater than you might expect, but this ensures consistency between show_output_files = TRUE and show_output_files = FALSE.
subset	Optional character vector. Subset of targets/imports to display in the graph. Applied after from, mode, and order. Be advised: edges are only kept for adjacent nodes in subset. If you do not select all the intermediate nodes, edges will drop from the graph.
make_imports	logical, whether to make the imports first. Set to FALSE to increase speed and risk using obsolete information.
from_scratch	logical, whether to assume all the targets will be made from scratch on the next make() . Makes all targets outdated, but keeps information about build progress in previous make() s.
group	optional character scalar, name of the column used to group nodes into columns. All the columns names of your config\$plan are choices. The other choices (such as "status") are column names in the nodes . To group nodes into clusters in the graph, you must also supply the clusters argument.
clusters	optional character vector of values to cluster on. These values must be elements of the column of the nodes data frame that you specify in the group argument to drake_graph_info() .
show_output_files	logical, whether to include file_out() files in the graph.
...	arguments passed to <code>networkD3::sankeyNetwork()</code> .

Value

A visNetwork graph.

See Also

[render_sankey_drake_graph\(\)](#), [vis_drake_graph\(\)](#), [drake_ggraph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan)
  # Plot the network graph representation of the workflow.
  sankey_drake_graph(config, width = '100%') # The width is passed to visNetwork
  # Show the legend separately.
  visNetwork::visNetwork(nodes = drake::legend_nodes())
  make(my_plan) # Run the project, build the targets.
  sankey_drake_graph(config) # The black nodes from before are now green.
  # Plot a subgraph of the workflow.
  sankey_drake_graph(config, from = c("small", "reg2"))
  # Optionally visualize clusters.
  config$plan$large_data <- grepl("large", config$plan$target)
  sankey_drake_graph(
    config, group = "large_data", clusters = c(TRUE, FALSE))
  # You can even use clusters given to you for free in the `graph$nodes`
  # data frame of `drake_graph_info`.
  sankey_drake_graph(
    config, group = "status", clusters = "imported")
})

## End(Not run)
```

shell_file	<i>Write an example shell.sh file required by make(..., parallelism = 'Makefile', prepend = 'SHELL=./shell.sh').</i>
------------	--

Description

This function also does a `chmod +x` to enable execute permissions.

Usage

```
shell_file(path = "shell.sh", overwrite = FALSE)
```

Arguments

path	file path of the shell file
overwrite	logical, whether to overwrite a possible destination file with the same name

Value

The return value of the call to `file.copy()` that wrote the shell file.

See Also

[make\(\)](#) [parallelism_choices\(\)](#), [drake_hpc_template_file\(\)](#), [drake_example\(\)](#), [drake_examples\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
# Write shell.sh to your working directory.
# Read the high-performance computing chapter
# (https://ropenscilabs.github.io/drake-manual/hpc.html)
# to learn how it is used
# in Makefile parallelism.
shell_file()
})

## End(Not run)
```

short_hash

Get the short hash algorithm of a drake cache.

Description

See the advanced storage tutorial at <https://ropenscilabs.github.io/drake-manual/store.html> for details.

Usage

```
short_hash(cache = drake::get_cache(verbose = verbose),
           verbose = drake::default_verbose())
```

Arguments

cache	drake cache. See new_cache() . If supplied, path and search are ignored.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = "0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>

Value

A character vector naming a hash algorithm.

See Also

[default_short_hash_algo\(\)](#), [default_long_hash_algo\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # Run the project and return the internal master configuration list.
  config <- make(my_plan)
  # Locate the storrr cache.
  cache <- config$cache
  # Get the short hash algorithm of the cache.
  short_hash(cache)
})

## End(Not run)
```

show_source

Show how a target/import was produced.

Description

Show the command that produced a target or indicate that the object or file was imported.

Usage

```
show_source(target, config, character_only = FALSE)
```

Arguments

target	symbol denoting the target or import or a character vector if <code>character_only</code> is TRUE.
config	a <code>drake_config()</code> list
character_only	logical, whether to interpret target as a symbol (FALSE) or character vector (TRUE).

Examples

```
## Not run:
plan <- drake_plan(x = rnorm(15))
make(plan)
config <- drake_config(plan)
show_source(x, config)
show_source(rnorm, config)

## End(Not run)
```

silencer_hook	<i>An example hook argument to <code>make()</code> that redirects output and error messages</i>
---------------	---

Description

Most users do not need to micromanage hooks.

Usage

```
silencer_hook(code)
```

Arguments

code code to run to build the target.

Value

A function that you can supply to the hook argument of `make()`.

See Also

[make\(\)](#), [message_sink_hook\(\)](#), [output_sink_hook\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
# Test out the silencer hook on its own.
try(
  silencer_hook({
    cat(1234)
    stop(5678)
  }),
  silent = FALSE
)
# Make a new workflow plan.
x <- drake_plan(loud = cat(1234), bad = stop(5678))
# Test out the silencer hook on a drake project.
# All output should be suppressed.
try(make(x, hook = silencer_hook), silent = FALSE)
})

## End(Not run)
```

target	<i>Define custom columns in a drake_plan().</i>
--------	---

Description

The `target()` function lets you define custom columns in a workflow plan data frame, both inside and outside calls to `drake_plan()`. @details Tidy evaluation is applied to the arguments, and the `!!` operator is evaluated immediately for expressions and language objects.

Usage

```
target(command = NULL, trigger = NULL, retries = NULL,
        timeout = NULL, cpu = NULL, elapsed = NULL, priority = NULL,
        worker = NULL, evaluator = NULL, ...)
```

Arguments

command	the command to build the target
trigger	the target's trigger
retries	number of retries in case of failure
timeout	overall timeout (in seconds) for building a target
cpu	cpu timeout (seconds) for building a target
elapsed	elapsed time (seconds) for building a target
priority	integer giving the build priority of a target. Given two targets about to be built at the same time, the one with the lesser priority (numerically speaking) will be built first.
worker	the preferred worker to be assigned the target (in parallel computing).
evaluator	the future evaluator of the target. Not yet supported.
...	named arguments specifying non-standard fields of the workflow plan.

Value

A one-row workflow plan data frame with the named arguments as columns.

See Also

[drake_plan\(\)](#), [make\(\)](#)

Examples

```
# Use target() to create your own custom columns in a drake plan.
# See ?triggers for more on triggers.
plan <- drake_plan(
  website_data = target(
    download_data("www.your_url.com"),
```

```

    trigger = "always",
    custom_column = 5
  ),
  analysis = analyze(website_data),
  strings_in_dots = "literals"
)
plan
# make(plan) # nolint
# Call target() inside or outside drake_plan().
target(
  download_data("www.your_url.com"),
  trigger = "always",
  custom_column = 5
)

```

target_namespaces	<i>For drake caches, list the storr cache namespaces that store target-level information.</i>
-------------------	---

Description

Ordinary users do not need to worry about this function. It is just another window into drake's internals.

Usage

```
target_namespaces(default = storr::storr_environment())$default_namespace)
```

Arguments

default	name of the default storr namespace
---------	-------------------------------------

Value

A character vector of storr namespaces that store target-level information.

See Also

[make\(\)](#)

Examples

```
target_namespaces()
```

this_cache	<i>Get the cache at the exact file path specified.</i>
------------	--

Description

This function does not apply to in-memory caches such as `storr_environment()`.

Usage

```
this_cache(path = drake::default_cache_path(), force = FALSE,
  verbose = drake::default_verbose(), fetch_cache = NULL,
  console_log_file = NULL)
```

Arguments

path	file path of the cache
force	logical, whether to load the cache despite any back compatibility issues with the running version of drake.
verbose	logical or numeric, control printing to the console. Use <code>pkgconfig</code> to set the default value of verbose for your R session: for example, <code>pkgconfig::set_config("drake::verbose" = "0 or FALSE: print nothing. 1 or TRUE: print only targets to build. 2: in addition, print checks and cache info. 3: in addition, print any potentially missing items. 4: in addition, print imports. Full verbosity.</code>
fetch_cache	character vector containing lines of code. The purpose of this code is to fetch the storr cache with a command like <code>storr_rds()</code> or <code>storr_dbi()</code> , but customized. This feature is experimental. It will turn out to be necessary if you are using both custom non-RDS caches and distributed parallelism (<code>parallelism = "future_lapply"</code> or <code>"Makefile"</code>) because the distributed R sessions need to know how to load the cache.
console_log_file	character scalar or NULL. If NULL, console output will be printed to the R console using <code>message()</code> . Otherwise, <code>console_log_file</code> should be the name of a flat file. Console output will be appended to that file.

Value

A drake/storr cache at the specified path, if it exists.

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  clean(destroy = TRUE)
  try(x <- this_cache(), silent = FALSE) # The cache does not exist yet.
```

```

load_mtcars_example() # Get the code with drake_example("mtcars").
make(my_plan) # Run the project, build the targets.
y <- this_cache() # Now, there is a cache.
z <- this_cache(".drake") # Same as above.
manual <- new_cache("manual_cache") # Make a new cache.
manual2 <- get_cache("manual_cache") # Get the new cache.
})

## End(Not run)

```

tracked

List the targets and imports that are reproducibly tracked.

Description

In other words, list all the nodes in your project's dependency network.

Usage

```
tracked(config)
```

Arguments

config An output list from `drake_config()`.

Value

A character vector with the names of reproducibly-tracked targets.

Examples

```

## Not run:
test_with_dir("Quarantine side effects.", {
load_mtcars_example() # Load the canonical example for drake.
# List all the targets/imports that are reproducibly tracked.
config <- drake_config(my_plan)
tracked(config)
})

## End(Not run)

```

trigger	<i>Set the trigger of a target.</i>
---------	-------------------------------------

Description

For details, see the chapter on triggers in the user manual: <https://ropenscilabs.github.io/drake-manual>

Usage

```
trigger(command = TRUE, depend = TRUE, file = TRUE,  
        condition = NULL, change = NULL)
```

Arguments

command	logical, whether to rebuild the target if the <code>drake_plan()</code> command changes.
depend	logical, whether to rebuild if a non-file dependency changes.
file	logical, whether to rebuild the target if a <code>file_in()/file_out()/knitr_in()</code> file changes.
condition	R code (expression or language object) that returns a logical. The target will rebuild if the code evaluates to TRUE.
change	R code (expression or language object) that returns any value. The target will rebuild if that value is different from last time or not already cached.

Details

Use this function inside a target's command in your `drake_plan()`. The target will rebuild if and only if:

- Any of `command`, `depend`, or `file` is TRUE, or
- `condition` evaluates to TRUE, or
- `change` evaluates to a value different from last time. There may be a slight efficiency loss if you set complex triggers for `change` and/or `condition` because drake needs to load any required dependencies into memory before evaluating these triggers.

Value

a list of trigger specification details that drake processes internally when it comes time to decide whether to build the target.

See Also

[drake_plan\(\)](#), [make\(\)](#)

Examples

```

# A trigger is just a set of decision rules
# to decide whether to build a target.
trigger()
# This trigger will build a target on Tuesdays
# and when the value of an online dataset changes.
trigger(condition = today() == "Tuesday", change = get_online_dataset())
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  # You can use a global trigger argument:
  # for example, to always run everything.
  make(my_plan, trigger = trigger(condition = TRUE))
  make(my_plan, trigger = trigger(condition = TRUE))
  # You can also define specific triggers for each target.
  plan <- drake_plan(
    x = rnorm(15),
    y = target(
      command = x + 1,
      trigger = trigger(depend = FALSE)
    )
  )
  # Now, when x changes, y will not.
  make(plan)
  make(plan)
  plan$command[1] <- "rnorm(16)" # change x
  make(plan)
})

## End(Not run)

```

vis_drake_graph

Show an interactive visual network representation of your drake project.

Description

To save time for repeated plotting, this function is divided into [drake_graph_info\(\)](#) and [render_drake_graph\(\)](#).

Usage

```

vis_drake_graph(config = drake::read_drake_config(),
  file = character(0), selfcontained = FALSE, build_times = "build",
  digits = 3, targets_only = FALSE, split_columns = NULL,
  font_size = 20, layout = "layout_with_sugiyama", main = NULL,
  direction = "LR", hover = TRUE, navigationButtons = TRUE,
  from = NULL, mode = c("out", "in", "all"), order = NULL,
  subset = NULL, ncol_legend = 1, full_legend = FALSE,
  make_imports = TRUE, from_scratch = FALSE, group = NULL,
  clusters = NULL, show_output_files = TRUE, collapse = TRUE, ...)

```

Arguments

config	a <code>drake_config()</code> configuration list. You can get one as a return value from <code>make()</code> as well.
file	Name of a file to save the graph. If NULL or character(0), no file is saved and the graph is rendered and displayed within R. If the file ends in a .png, .jpg, .jpeg, or .pdf extension, then a static image will be saved. In this case, the webshot package and PhantomJS are required: <code>install.packages("webshot"); webshot::install_phantomjs()</code> . If the file does not end in a .png, .jpg, .jpeg, or .pdf extension, an HTML file will be saved, and you can open the interactive graph using a web browser.
selfcontained	logical, whether to save the file as a self-contained HTML file (with external resources base64 encoded) or a file with external resources placed in an adjacent directory. If TRUE, pandoc is required. The selfcontained argument only applies to HTML files. In other words, if file is a PNG, PDF, or JPEG file, for instance, the point is moot.
build_times	character string or logical. If character, the choices are 1. "build": runtime of the command plus the time it take to store the target or import. 2. "command": just the runtime of the command. 3. "none": no build times. If logical, build_times selects whether to show the times from 'build_times(..., type = "build")' or use no build times at all. See <code>build_times()</code> for details.
digits	number of digits for rounding the build times
targets_only	logical, whether to skip the imports and only include the targets in the workflow plan.
split_columns	logical, deprecated.
font_size	numeric, font size of the node labels in the graph
layout	name of an igraph layout to use, such as 'layout_with_sugiyama' or 'layout_as_tree'. Be careful with 'layout_as_tree': the graph is a directed acyclic graph, but not necessarily a tree.
main	character string, title of the graph
direction	an argument to <code>visNetwork::visHierarchicalLayout()</code> indicating the direction of the graph. Options include 'LR', 'RL', 'DU', and 'UD'. At the time of writing this, the letters must be capitalized, but this may not always be the case ;) in the future.
hover	logical, whether to show the command that generated the target when you hover over a node with the mouse. For imports, the label does not change with hovering.
navigationButtons	logical, whether to add navigation buttons with <code>visNetwork::visInteraction(navigationButtons = TRUE)</code>
from	Optional collection of target/import names. If from is nonempty, the graph will restrict itself to a neighborhood of from. Control the neighborhood with mode and order.
mode	Which direction to branch out in the graph to create a neighborhood around from. Use "in" to go upstream, "out" to go downstream, and "all" to go both ways and disregard edge direction altogether.

order	How far to branch out to create a neighborhood around from. Defaults to as far as possible. If a target is in the neighborhood, then so are all of its custom <code>file_out()</code> files if <code>show_output_files</code> is TRUE. That means the actual graph order may be slightly greater than you might expect, but this ensures consistency between <code>show_output_files = TRUE</code> and <code>show_output_files = FALSE</code> .
subset	Optional character vector. Subset of targets/imports to display in the graph. Applied after <code>from</code> , <code>mode</code> , and <code>order</code> . Be advised: edges are only kept for adjacent nodes in <code>subset</code> . If you do not select all the intermediate nodes, edges will drop from the graph.
ncol_legend	number of columns in the legend nodes. To remove the legend entirely, set <code>ncol_legend</code> to NULL or 0.
full_legend	logical. If TRUE, all the node types are printed in the legend. If FALSE, only the node types used are printed in the legend.
make_imports	logical, whether to make the imports first. Set to FALSE to increase speed and risk using obsolete information.
from_scratch	logical, whether to assume all the targets will be made from scratch on the next <code>make()</code> . Makes all targets outdated, but keeps information about build progress in previous <code>make()</code> s.
group	optional character scalar, name of the column used to group nodes into columns. All the columns names of your <code>config\$plan</code> are choices. The other choices (such as "status") are column names in the nodes. To group nodes into clusters in the graph, you must also supply the <code>clusters</code> argument.
clusters	optional character vector of values to cluster on. These values must be elements of the column of the nodes data frame that you specify in the <code>group</code> argument to <code>drake_graph_info()</code> .
show_output_files	logical, whether to include <code>file_out()</code> files in the graph.
collapse	logical, whether to allow nodes to collapse if you double click on them. Analogous to <code>visNetwork::visOptions(collapse = TRUE)</code> or <code>visNetwork::visOptions(collapse = TRUE)</code> .
...	arguments passed to <code>visNetwork()</code> .

Value

A `visNetwork` graph.

See Also

[render_drake_graph\(\)](#), [sankey_drake_graph\(\)](#), [drake_ggraph\(\)](#)

Examples

```
## Not run:
test_with_dir("Quarantine side effects.", {
  load_mtcars_example() # Get the code with drake_example("mtcars").
  config <- drake_config(my_plan)
  # Plot the network graph representation of the workflow.
  vis_drake_graph(config, width = '100%') # The width is passed to visNetwork
```

```
make(my_plan) # Run the project, build the targets.
vis_drake_graph(config) # The red nodes from before are now green.
# Plot a subgraph of the workflow.
vis_drake_graph(
  config,
  from = c("small", "reg2"),
  to = "summ_regression2_small"
)
# Optionally visualize clusters.
config$plan$large_data <- grepl("large", config$plan$target)
vis_drake_graph(
  config, group = "large_data", clusters = c(TRUE, FALSE))
# You can even use clusters given to you for free in the `graph$nodes`
# data frame of `drake_graph_info()`.
vis_drake_graph(
  config, group = "status", clusters = "imported")
})

## End(Not run)
```

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