Package 'bigrquery'

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bigrquery-package

bigrquery: An Interface to Google's 'BigQuery' 'API'

Description

Index

Easily talk to Google's 'BigQuery' database from R.

Package options

bigrquery.quiet Verbose output during processing? The default value, NA, turns on verbose output for queries that run longer than two seconds. Use TRUE for immediate verbose output, FALSE for quiet operation.

bigrquery.page.size Default page size for fetching data, defaults to 1e4.

Author(s)

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• RStudio [copyright holder]

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See Also

Useful links:

- https://github.com/rstats-db/bigrquery
- Report bugs at https://github.com/rstats-db/bigrquery/issues

copy_table

Copy one or more source tables to a destination table.

Description

Each source table and the destination table should be table references, that is, lists with exactly three entries: project_id, dataset_id, and table_id.

Usage

```
copy_table(src, dest, create_disposition = "CREATE_IF_NEEDED",
    write_disposition = "WRITE_EMPTY", project = NULL, ...)
```

Arguments

src either a single table reference, or a list of table references

dest destination table

create_disposition

behavior for table creation if the destination already exists. defaults to "CREATE_IF_NEEDED",

the only other supported value is "CREATE_NEVER"; see the API documentation

for more information

write_disposition

behavior for writing data if the destination already exists. defaults to "WRITE_EMPTY",

other possible values are "WRITE_TRUNCATE" and "WRITE_APPEND"; see the API

documentation for more information

project ID to use for the copy job. defaults to the project of the destination table.

... Additional arguments merged into the body of the request. snake_case will

automatically be converted into camelCase so you can use consistent argument

names.

See Also

API documentation: https://cloud.google.com/bigquery/docs/tables#copyingtable

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Examples

```
## Not run:
src <- list(project_id = "publicdata", dataset_id = "samples", table_id = "shakespeare")
dest <- list(project_id = "myproject", dataset_id = "mydata", table_id = "shakespeare")
doubled <- dest
doubled$table_id <- "double_shakespeare"
copy_table(src, dest)
copy_table(list(src, dest), doubled)
## End(Not run)</pre>
```

DBI

DBI methods

Description

Implementations of pure virtual functions defined in the DBI package.

```
## S4 method for signature 'BigQueryDriver'
show(object)
## S4 method for signature 'BigQueryDriver'
dbConnect(drv, project, dataset, billing = project,
  page_size = 10000, quiet = NA, use_legacy_sql = TRUE, ...)
## S4 method for signature 'BigQueryDriver'
dbIsValid(dbObj, ...)
## S4 method for signature 'BigQueryDriver'
dbGetInfo(dbObj, ...)
## S4 method for signature 'BigQueryDriver'
dbDataType(dbObj, obj, ...)
## S4 method for signature 'BigQueryConnection'
show(object)
## S4 method for signature 'BigQueryConnection'
dbIsValid(dbObj, ...)
## S4 method for signature 'BigQueryConnection'
dbDisconnect(conn, ...)
## S4 method for signature 'BigQueryConnection, character'
dbSendQuery(conn, statement, ...)
```

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```
## S4 method for signature 'BigQueryConnection, character'
dbQuoteString(conn, x, ...)
## S4 method for signature 'BigQueryConnection, character'
dbQuoteIdentifier(conn, x, ...)
## S4 method for signature 'BigQueryConnection,character,data.frame'
dbWriteTable(conn, name,
  value, overwrite = FALSE, append = FALSE, ..., row.names = NA)
## S4 method for signature 'BigQueryConnection,character'
dbReadTable(conn, name, ...,
  row.names = NA)
## S4 method for signature 'BigQueryConnection'
dbListTables(conn, ...)
## S4 method for signature 'BigQueryConnection, character'
dbExistsTable(conn, name, ...)
## S4 method for signature 'BigQueryConnection,character'
dbListFields(conn, name, ...)
## S4 method for signature 'BigQueryConnection, character'
dbRemoveTable(conn, name, ...)
## S4 method for signature 'BigQueryConnection'
dbGetInfo(dbObj, ...)
## S4 method for signature 'BigQueryConnection'
dbBegin(conn, ...)
## S4 method for signature 'BigQueryConnection'
dbCommit(conn, ...)
## S4 method for signature 'BigQueryConnection'
dbRollback(conn, ...)
## S4 method for signature 'BigQueryResult'
show(object)
## S4 method for signature 'BigQueryResult'
dbIsValid(dbObj, ...)
## S4 method for signature 'BigQueryResult'
dbClearResult(res, ...)
```

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```
## S4 method for signature 'BigQueryResult'
dbFetch(res, n = -1, ..., row.names = NA)

## S4 method for signature 'BigQueryResult'
dbHasCompleted(res, ...)

## S4 method for signature 'BigQueryResult'
dbGetStatement(res, ...)

## S4 method for signature 'BigQueryResult'
dbColumnInfo(res, ...)

## S4 method for signature 'BigQueryResult'
dbGetRowCount(res, ...)

## S4 method for signature 'BigQueryResult'
dbGetRowsAffected(res, ...)

## S4 method for signature 'BigQueryResult'
dbGetRowsAffected(res, ...)
```

Arguments

object Any R object

drv an object that inherits from DBIDriver, or an existing DBIConnection object (in

order to clone an existing connection).

project The project name, a string

dataset The name of the dataset to create, a string

billing project ID to use for billing page_size Number of items per page.

quiet if FALSE, prints informative status messages.

use_legacy_sql (optional) set to FALSE to enable BigQuery's standard SQL.

authentication arguments needed by the DBMS instance; these typically in-

clude user, password, host, port, dbname, etc. For details see the appropriate

DBIDriver.

db0bj An object inheriting from DBIObject, i.e. DBIDriver, DBIConnection, or a

DBIResult

obj An R object whose SQL type we want to determine.

conn A DBIConnection object, as returned by dbConnect().

statement a character string containing SQL.

x A character vector to quote as string.

name A character string specifying the unquoted DBMS table name, or the result of a

call to dbQuoteIdentifier().

value a data.frame (or coercible to data.frame).

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overwrite a logical specifying whether to overwrite an existing table or not. Its default is

FALSE.

append a logical specifying whether to append to an existing table in the DBMS. Its

default is FALSE.

row.names A logical specifying whether the row.names should be output to the output

DBMS table; if TRUE, an extra field whose name will be whatever the R identifier "row.names" maps to the DBMS (see DBI::make.db.names()). If NA will

add rows names if they are characters, otherwise will ignore.

res An object inheriting from DBIResult.

maximum number of records to retrieve per fetch. Use n = -1 or n = Inf to

retrieve all pending records. Some implementations may recognize other special

values.

params A list of bindings, named or unnamed.

dbi_driver

BigQuery DBI driver

Description

Creates a BigQuery DBI driver for use in DBI::dbConnect().

Usage

```
dbi_driver()
bigquery()
```

Examples

```
## Not run:
DBI::dbConnect(bigquery(), dataset = "mydb", project = "myproject")
## End(Not run)
```

delete_dataset

Deletes an existing dataset in a project

Description

Deletes an existing dataset in a project

```
delete_dataset(project, dataset, deleteContents = FALSE)
```

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Arguments

project The project name, a string
dataset The dataset to delete, a string
deleteContents Whether to delete the tables if the dataset is not empty, a boolean

See Also

 $Google\ API\ documentation: \ https://cloud.google.com/bigquery/docs/reference/v2/datasets/delete$

Other datasets: get_dataset, insert_dataset, list_datasets, update_dataset

Examples

```
## Not run:
delete_dataset("publicdata", "shakespeare", deleteContents = TRUE)
delete_dataset("myproject", "emptydataset")
## End(Not run)
```

delete_table

Delete a table.

Description

Delete a table.

Usage

```
delete_table(project, dataset, table)
```

Arguments

project The project name, a string

dataset The name of the dataset to create, a string

table name of the table

See Also

```
API\ documentation: \ https://developers.google.com/bigquery/docs/reference/v2/tables/delete
```

Other tables: get_table, list_tables

Examples

```
## Not run:
get_table("publicdata", "samples", "natality")
## End(Not run)
```

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format_dataset

Format dataset and project ID as a BQ-style identifier

Description

This function composes a dataset identifier from its individual components.

Usage

```
format_dataset(project_id, dataset)
```

Arguments

```
project_id project ID dataset name
```

Value

a character.

See Also

Other identifier functions: format_table, parse_dataset, parse_table

format_table

Format dataset, project and table ID as a BQ-style identifier

Description

This function composes a table identifier from its individual components.

Usage

```
format_table(project_id, dataset, table)
```

Arguments

```
project_id project ID
dataset dataset name
table table ID
```

Value

a character.

See Also

Other identifier functions: format_dataset, parse_dataset, parse_table

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get_dataset

Gets an existing dataset in a project

Description

```
Gets an existing dataset in a project exists_dataset merely checks if a table exists, and returns either TRUE or FALSE.
```

Usage

```
get_dataset(project, dataset)
exists_dataset(project, dataset)
```

Arguments

project The project name, a string dataset The dataset to get, a string

Value

a character vector of dataset names

See Also

```
Google API documentation: https://cloud.google.com/bigquery/docs/reference/v2/datasets/get

Other datasets: delete_dataset, insert_dataset, list_datasets, update_dataset
```

Examples

```
## Not run:
get_dataset("publicdata", "shakespeare")
## End(Not run)
```

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get_job

Check status of a job.

Description

Check status of a job.

Usage

```
get_job(project, job)
```

Arguments

project project name job job id

Value

a job resource list, as documented at https://developers.google.com/bigquery/docs/reference/v2/jobs

See Also

API documentation for get method: https://developers.google.com/bigquery/docs/reference/v2/jobs/get
wait_for() to wait for a job to complete
Other jobs: insert_extract_job, insert_query_job, insert_upload_job, wait_for

get_table

Retrieve table metadata

Description

get_table returns a table's metadata as a nested list. In addition to a regular error, the condition bigrquery_notFound (which can be handled via base::tryCatch()) is raised if the table could not be found.

exists_table merely checks if a table exists, and returns either TRUE or FALSE.

```
get_table(project, dataset, table)
exists_table(project, dataset, table)
```

insert_dataset

Arguments

project The project name, a string

dataset The name of the dataset to create, a string

table name of the table

Value

A table resource list, as described by https://developers.google.com/bigquery/docs/reference/v2/tables

See Also

```
API\ documentation: \ \texttt{https://developers.google.com/bigquery/docs/reference/v2/tables/get}
```

Other tables: delete_table, list_tables

Examples

```
## Not run:
str(get_table("publicdata", "samples", "natality"))
str(get_table("publicdata", "samples", "gsod"))
str(get_table("githubarchive", "github", "timeline"))
## End(Not run)
```

insert_dataset

Creates a new dataset in a project

Description

Creates a new dataset in a project

Usage

```
insert_dataset(project, dataset, ...)
```

Arguments

project The project name, a string

dataset The name of the dataset to create, a string

... Additional arguments merged into the body of the request. snake_case will

automatically be converted into camelCase so you can use consistent argument

names.

insert_extract_job 13

See Also

 $Google\ API\ documentation: \ https://cloud.google.com/bigquery/docs/reference/v2/datasets/insert$

Other datasets: delete_dataset, get_dataset, list_datasets, update_dataset

Create a new extract job.

Examples

```
## Not run:
insert_dataset("myproject", "new_dataset")
## End(Not run)
```

Description

insert_extract_job

This is a low-level function that creates an extract job. To wait until it is finished, see wait_for.

Usage

```
insert_extract_job(project, dataset, table, destination_uris,
  compression = "NONE", destination_format = "NEWLINE_DELIMITED_JSON", ...,
  print_header = TRUE, billing = project)
```

Arguments

project The project name, a string dataset The name of the dataset to create, a string table name of table to insert values into destination_uris Fully qualified google storage url. For large extracts you may need to specify a wild-card since Compression type ("NONE", "GZIP") compression destination_format Destination format ("CSV", "ARVO", or "NEWLINE_DELIMITED_JSON") Additional arguments merged into the body of the request. snake_case will . . . automatically be converted into camelCase so you can use consistent argument names. print_header Include row of column headers in the results? billing project ID to use for billing

Value

```
a job resource list, as documented at https://cloud.google.com/bigquery/docs/reference/\nu2/jobs
```

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See Also

Other jobs: get_job, insert_query_job, insert_upload_job, wait_for

insert_query_job

Create a new query job.

Description

This is a low-level function that creates a query job. To wait until it is finished and then retrieve the results, see query_exec()

Usage

```
insert_query_job(query, project, destination_table = NULL,
  default_dataset = NULL, create_disposition = "CREATE_IF_NEEDED",
  write_disposition = "WRITE_EMPTY", use_legacy_sql = TRUE, ...)
```

Arguments

query SQL query string

project The project name, a string

destination_table

(optional) destination table for large queries, either as a string in the format used by BigQuery, or as a list with project_id, dataset_id, and table_id entries

default_dataset

(optional) default dataset for any table references in query, either as a string in the format used by BigQuery or as a list with project_id and dataset_id entries

create_disposition

behavior for table creation. defaults to "CREATE_IF_NEEDED", the only other supported value is "CREATE_NEVER"; see the API documentation for more information

write_disposition

behavior for writing data. defaults to "WRITE_EMPTY", other possible values are "WRITE_TRUNCATE" and "WRITE_APPEND"; see the API documentation for more information

use_legacy_sql (optional) set to FALSE to enable BigQuery's standard SQL.

Additional arguments merged into the body of the request. snake_case will automatically be converted into camelCase so you can use consistent argument names.

Value

a job resource list, as documented at https://developers.google.com/bigquery/docs/reference/v2/jobs

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See Also

API documentation for insert method: https://developers.google.com/bigquery/docs/reference/v2/jobs/insert

Other jobs: get_job, insert_extract_job, insert_upload_job, wait_for

insert_table

Insert empty table

Description

Insert empty table

Usage

```
insert_table(project, dataset, table, ...)
```

Arguments

project The project name, a string

dataset The name of the dataset to create, a string

table name of the table

... Additional arguments merged into the body of the request. snake_case will

automatically be converted into camelCase so you can use consistent argument

names.

See Also

API documentation: https://developers.google.com/bigquery/docs/reference/v2/tables/insert

insert_upload_job

Upload data.

Description

This sends all of the data inline in the HTTP request so is only suitable for relatively small datasets.

```
insert_upload_job(project, dataset, table, values, billing = project,
  create_disposition = "CREATE_IF_NEEDED",
  write_disposition = "WRITE_APPEND", ...)
```

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Arguments

project The project name, a string

dataset The name of the dataset to create, a string

table name of table to insert values into values data frame of data to upload billing project ID to use for billing

create_disposition

behavior for table creation if the destination already exists. defaults to "CREATE_IF_NEEDED",

the only other supported value is "CREATE_NEVER"; see the API documentation

for more information

write_disposition

behavior for writing data if the destination already exists. defaults to "WRITE_APPEND", other possible values are "WRITE_TRUNCATE" and "WRITE_EMPTY"; see the API

documentation for more information

.. Additional arguments merged into the body of the request. snake_case will

automatically be converted into camelCase so you can use consistent argument

names.

See Also

Google API documentation: https://developers.google.com/bigquery/loading-data-into-bigquery#loaddatapostrequest

Other jobs: get_job, insert_extract_job, insert_query_job, wait_for

Examples

```
## Not run:
list_datasets("193487687779")
list_tables("193487687779", "houston")
job <- insert_upload_job("193487687779", "houston", "mtcars", mtcars)
wait_for(job)
list_tables("193487687779", "houston")
delete_table("193487687779", "houston", "mtcars")
## End(Not run)</pre>
```

list_datasets

List the datasets in a project

Description

List the datasets in a project

```
list_datasets(project, page_size = 50, max_pages = Inf)
```

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Arguments

project The project name, a string page_size Number of items per page

max_pages Maximum number of pages to retrieve

Value

a character vector of dataset names

See Also

```
Google\ API\ documentation: \ https://developers.google.com/bigquery/docs/reference/v2/datasets/list
```

Other datasets: delete_dataset, get_dataset, insert_dataset, update_dataset

Examples

```
## Not run:
list_datasets("publicdata")
list_datasets("githubarchive")
## End(Not run)
```

list_projects

List all projects to which you have been granted any project role.

Description

List all projects to which you have been granted any project role.

Usage

```
list_projects()
```

Value

a character vector of project ids named with their friendly names.

See Also

 $API \ documentation \ at \ https://developers.google.com/bigquery/docs/reference/v2/projects/list$

Examples

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

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Description

Retrieve data from a table.

list_tabledata_callback calls the supplied callback with each page of data.

Usage

```
list_tabledata(project, dataset, table, page_size = 10000,
   table_info = NULL, max_pages = 10, warn = TRUE,
   quiet = getOption("bigrquery.quiet"))

list_tabledata_callback(project, dataset, table, callback, table_info = NULL,
   page_size = getOption("bigrquery.page.size"), max_pages = 10,
   warn = TRUE, quiet = getOption("bigrquery.quiet"))

list_tabledata_iter(project, dataset, table, table_info = NULL)
```

Arguments

project	The project name, a string
dataset	The name of the dataset to create, a string
table	name of the table
page_size	Number of items per page.
table_info	if known, the table information retrieved with get_table()
max_pages	maximum number of pages to retrieve. Use Inf to retrieve the complete dataset.
warn	If TRUE, warn when there are rows remaining to be pulled down from database.
quiet	if FALSE, prints informative status messages.
callback	function called with single argument, the data from the current page of data

Value

list_tabledata returns a single dataframe.

list_tabledata_iter returns a named list with functions

- next_ (fetches one chunk of rows)
- next_paged (fetches arbitrarily many rows using a specified page size)
- is_complete (checks if all rows have been fetched)
- get_schema (returns the schema of the table),
- get_rows_fetched (returns the number of rows already fetched).
- get_rows (returns total number of rows)

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See Also

API documentation at https://developers.google.com/bigquery/docs/reference/v2/tabledata/list

Examples

```
## Not run:
billing_project <- "341409650721" # put your project number here
natal <- list_tabledata("publicdata", "samples", "natality", max_pages = 2,
    page_size = 10)
dim(natal)
## End(Not run)</pre>
```

list_tables

List available tables in dataset.

Description

List available tables in dataset.

Usage

```
list_tables(project, dataset, page_size = 50, max_pages = Inf)
```

Arguments

project The project name, a string

dataset The name of the dataset to create, a string

page_size Number of items per page

max_pages Maximum number of pages to retrieve

Value

a character vector of table names

See Also

```
API\ documentation: \ https://developers.google.com/bigquery/docs/reference/v2/tables/list
```

```
Other tables: delete_table, get_table
```

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Examples

```
## Not run:
list_tables("publicdata", "samples")
list_tables("githubarchive", "github")
list_tables("publicdata", "samples", max_pages = 2, page_size = 2)
## End(Not run)
```

parse_dataset

Parse a BQ-style identifier into project/dataset IDs

Description

This function splits a dataset identifier (given as character) into its components.

Usage

```
parse_dataset(dataset, project_id = NULL)
```

Arguments

dataset dataset name

project_id (optional) project ID to use if none is provided in dataset

Value

a list with project_id and dataset_id components (either of which may be NULL).

See Also

Other identifier functions: format_dataset, format_table, parse_table

parse_table

Parse a BQ-style identifier into project/dataset/table IDs

Description

This function splits a table identifier (given as character) into its components.

```
parse_table(table, project_id = NULL)
```

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Arguments

table table name

project_id (optional) project ID to use if none is provided in table

Value

a list with project_id, dataset_id, and table_id components (any of which may be NULL).

See Also

Other identifier functions: format_dataset, format_table, parse_dataset

query_exec

Run a asynchronous query and retrieve results.

Description

This is a high-level function that inserts a query job (with insert_query_job()), repeatedly checks the status (with get_job()) until it is complete, then retrieves the results (with list_tabledata())

Usage

```
query_exec(query, project, destination_table = NULL, default_dataset = NULL,
  page_size = 10000, max_pages = 10, warn = TRUE,
  create_disposition = "CREATE_IF_NEEDED",
  write_disposition = "WRITE_EMPTY", use_legacy_sql = TRUE,
  quiet = getOption("bigrquery.quiet"), ...)
```

Arguments

query SQL query string

project The project name, a string

destination_table

(optional) destination table for large queries, either as a string in the format used by BigQuery, or as a list with project_id, dataset_id, and table_id entries

default_dataset

(optional) default dataset for any table references in query, either as a string in the format used by BigQuery or as a list with project_id and dataset_id

entries

page_size Number of items per page.

max_pages maximum number of pages to retrieve. Use Inf to retrieve the complete dataset.

warn If TRUE, warn when there are rows remaining to be pulled down from database.

create_disposition

behavior for table creation. defaults to "CREATE_IF_NEEDED", the only other supported value is "CREATE_NEVER"; see the API documentation for more information

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write_disposition

behavior for writing data. defaults to "WRITE_EMPTY", other possible values are "WRITE_TRUNCATE" and "WRITE_APPEND"; see the API documentation for more

information

use_legacy_sql (optional) set to FALSE to enable BigQuery's standard SQL.

quiet if FALSE, prints informative status messages.

... Additional arguments merged into the body of the request. snake_case will

automatically be converted into camelCase so you can use consistent argument

names.

See Also

Google documentation describing asynchronous queries: https://developers.google.com/bigquery/docs/queries#asyncqueries

Google documentation for handling large results: https://developers.google.com/bigquery/querying-data#largequeryresults

Examples

```
## Not run:
project <- "fantastic-voyage-389" # put your project ID here
sql <- "SELECT year, month, day, weight_pounds FROM [publicdata:samples.natality] LIMIT 5"
query_exec(sql, project = project)
# Put the results in a table you own (which uses project by default)
query_exec(sql, project = project, destination_table = "my_dataset.results")
# Use a default dataset for the query
sql <- "SELECT year, month, day, weight_pounds FROM natality LIMIT 5"
query_exec(sql, project = project, default_dataset = "publicdata:samples")
## End(Not run)</pre>
```

src_bigquery

A bigguery data source.

Description

Use src_bigquery to connect to an existing bigquery dataset, and tbl to connect to tables within that database.

Usage

```
src_bigquery(project, dataset, billing = project, max_pages = 10)
```

Arguments

project project id or name dataset dataset name

billing billing project, if different to project
max_pages (IGNORED) max pages returned by a query

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Examples

```
## Not run:
library(dplyr)
# To run this example, replace billing with the id of one of your projects
# set up for billing
con <- DBI::dbConnect(dbi_driver(),</pre>
  project = "publicdata",
  dataset = "samples",
  billing = "887175176791"
DBI::dbListTables(con)
DBI::dbGetQuery(con, "SELECT * FROM gsod LIMIT 5")
# You can also use the dplyr interface
shakespeare <- con %>% tbl("shakespeare")
shakespeare
shakespeare %>%
  group_by(word) %>%
  summarise(n = sum(word_count)) %>%
  arrange(desc(n))
## End(Not run)
```

update_dataset

Updates an existing dataset in a project

Description

Updates an existing dataset in a project

Usage

```
update_dataset(project, dataset, ...)
```

Arguments

project The project name, a string

dataset The name of the dataset to create, a string

... Additional arguments merged into the body of the request. snake_case will

automatically be converted into camelCase so you can use consistent argument

names.

See Also

 $Google\ API\ documentation: \ https://cloud.google.com/bigquery/docs/reference/v2/datasets/update$

 $Other\ datasets:\ delete_dataset,\ get_dataset,\ insert_dataset,\ list_datasets$

24 wait_for

Examples

```
## Not run:
update_dataset("myproject", "existing_dataset", "my description", "friendly name")
## End(Not run)
```

wait_for

Wait for a job to complete, optionally printing updates

Description

Wait for a job to complete, optionally printing updates

Usage

```
wait_for(job, quiet = getOption("bigrquery.quiet"), pause = 0.5)
```

Arguments

quiet

job to wait for. Probably result of insert_query_job() or insert_upload_job()

if FALSE print informative progress messages, if TRUE is silent, if NA displays

messages for long-running jobs.

pause amount of time to wait between status requests

See Also

```
Other jobs: get_job, insert_extract_job, insert_query_job, insert_upload_job
```

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