

Package ‘nettskjemar’

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Type Package

Title Connect to the 'nettskjema.no' API of the University of Oslo

Version 1.0.4

Description Enables users to retrieve data, meta-data, and codebooks from [<https://nettskjema.no/>](https://nettskjema.no/). The data from the API is richer than from the online data portal. This package is not developed by the University of Oslo IT. Mowinckel (2021) [<doi:10.5281/zenodo.4745481>](https://doi.org/10.5281/zenodo.4745481).

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has_codebook	<i>Check if form has codebook</i>
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Description

Codebook is by default turned off in Nettskjema, but best practices in handling data is to have it on. This function checks if the codebook of a form has been activated or not

Usage

```
has_codebook(form_id)
```

Arguments

form_id	integer. Number of the form to retrieve
---------	---

Value

logical is codebook is turned on

Examples

```
has_codebook(123823)
```

ns_add_labels	<i>Add Labels to Dataset</i>
---------------	------------------------------

Description

The 'ns_add_labels' function applies labels to variables in a dataset based on a provided codebook. It assigns variable labels, value labels, and metadata required for the "ns-data" class.

Usage

```
ns_add_labels(data, codebook)
```

Arguments

data	data from ns_get_data
codebook	object from ns_get_codebook

Value

A data frame with the same structure as 'data', but with variable and value labels applied. The resulting object is assigned the class "ns-data".

Examples

```
data <- ns_get_data(123823)
cb <- ns_get_codebook(123823)
labeled_data <- ns_add_labels(data, cb)
```

ns_alter_checkbox *Alter checkbox matrix variables in a dataset*

Description

This function processes checkbox matrix variables in a dataset, transforming their representations into one of the specified formats.

Usage

```
ns_alter_checkbox(data, to = c("character", "list"), sep = ",", cb = NULL)
```

Arguments

data A 'data.frame' containing the dataset to modify.

to A character string specifying the output format for checkbox matrix variables. Must be one of "character" or "list".

sep A character string used as a separator when 'to = "character"'. Defaults to ",".

cb An optional codebook ('data.frame') to identify checkbox matrix variables. If 'NULL', the codebook is generated using 'ns_get_codebook()'.

Value

A modified 'data.frame' with processed checkbox matrix variables.

Examples

```
dt <- ns_get_data(123823)
cb <- ns_get_codebook(123823)
ns_alter_checkbox(dt, to = "list", cb = cb)
ns_alter_checkbox(dt, to = "character", sep = ";", cb = cb)
```

ns_api_docs *Access Nettskjema API Documentation*

Description

Opens the browser to display the API documentation for the Nettskjema PI.

Usage

```
ns_api_docs()
```

Value

None. Opens a browser window.

Examples

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

ns_client

Create an OAuth2 Client for Nettskjema API

Description

This function initializes an OAuth2 client using the 'httr2::oauth_client' function. It is used to authenticate and interact with the Nettskjema API.

Usage

```
ns_client(  
  client_id = Sys.getenv("NETTSKJEMA_CLIENT_ID"),  
  client_secret = Sys.getenv("NETTSKJEMA_CLIENT_SECRET"),  
  client_name = "nettskjemar"  
)
```

Arguments

client_id [character] The client ID provided by Nettskjema.
client_secret [character] The client secret provided by Nettskjema.
client_name [character] An optional name for the client (default = "nettskjemar").

Value

A configured 'httr2::oauth_client' object.

Examples

```
## Not run:  
# Example: Initialize an OAuth2 client for Nettskjema  
client <- ns_client(  
  client_id = "your_client_id",  
  client_secret = "your_client_secret"  
)  
  
# Using a custom client name  
client <- ns_client(  
  client_id = "your_client_id",
```

```
    client_secret = "your_client_secret",
    client_name = "custom_client_name"
)

## End(Not run)
```

ns_create_client *Create a Nettskjema Client*

Description

Opens the Nettskjema client creation URL in the default web browser.

Usage

```
ns_create_client()
```

Details

Use this function to create a new client for accessing Nettskjema APIs.

Value

NULL. Opens the client creation page in a browser.

Examples

```
## Not run:
ns_create_client()

## End(Not run)
```

ns_get_attachment *Save Nettskjema attachments to file*

Description

The Nettskjema forms has an option to upload attachments with forms. These can be retrieved by this function. Recommended workflow is to first call [ns_list_submission_attachments](#), and use the output of this to pass along to the function. This function is called by [ns_get_form_attachments](#), but you can use it to define your own output file names.

Usage

```
ns_get_attachment(attachment_id, path = NULL)
```

Arguments

attachment_id integer. Unique ID of attachment, as found in the submission data.
path Character. Location to save the file.

Value

httr2-response. saves attachment to file.

Examples

```
## Not run:  
#submission_id <- c(22222, 1232, 21555)  
#attach_dt <- ns_list_submission_attachments(submission_id)  
#ns_save_attachment(path = attach_dt$path, output = attach_dt$standardized)  
  
## End(Not run)
```

ns_get_codebook	<i>Get codebook for a form</i>
-----------------	--------------------------------

Description

With the given API token, will retrieve a list of all the forms you have access to

Usage

```
ns_get_codebook(form_id, asis = FALSE)
```

Arguments

form_id integer. Number of the form to retrieve
asis logical. Whether to return the raw content from nettskjema. Default is FALSE.

Value

list of class ns_meta_data

Examples

```
ns_get_codebook(123823)  
ns_get_codebook(123823, asis = TRUE)
```

`ns_get_data`*Get data from a form*

Description

This function connects to a specific form and fetches all answers. The responses are placed in a `data.frame` for easy use.

Usage

```
ns_get_data(form_id, type = NULL)
```

```
ns_get_submissions(form_id, type = NULL)
```

Arguments

<code>form_id</code>	integer. Number of the form to retrieve
<code>type</code>	Character or NULL. One of either "original" or "long".

Details

"original" - Returns data in the same tabular format as delivered by Nettskjema.

"long" - Returns the data in tall format, where there are multiple rows per participant (one per question) and each choice is timestamped.

Value

`data.frame`

Functions

- `ns_get_submissions()`: Alternative function name, does the same.

Examples

```
# Retrieve all data
ns_get_data(123823)

ns_get_data(123823, "long")
```

ns_get_forms	<i>Get all forms you have access to</i>
--------------	---

Description

All users have access to specific forms, and this function uses the token provided to check what the current user has access to.

Usage

```
ns_get_forms(asis = FALSE)
```

Arguments

`asis` logical. Whether to return the raw content from nettskjema. Default is FALSE.

Value

data.frame, if `asis = TRUE` returns a list

Examples

```
ns_get_forms()
```

ns_get_form_attachments	<i>Retrieve all attachments associated with a Nettskjema</i>
-------------------------	--

Description

Some Nettskjema have fields for attachments. These can be downloaded through this function. There are two naming convention that may be used for the saved files' names. See output of [ns_list_submission_attachments](#) for idea of the names used.

Usage

```
ns_get_form_attachments(  
  form_id,  
  filenames = c("standardized", "original"),  
  output_dir = "."  
)
```

Arguments

form_id	integer. Number of the form to retrieve
filenames	Character of either 'standardized' (default) or 'original' indicating which file names to use.
output_dir	directory to output the files to

Details

filenames types

"original" - uses file names as they were uploaded to Nettskjema

"standardized" - creates file names based on the submission id and a counter number to uniquely create file names for each submission (in case there are more than one attachment)

Value

invisible named logical if the file was saved successfully

Examples

```
## Not run:
form_id <- 1100000
ns_get_form_attachments(form_id)

# save files to specific folder
ns_get_form_attachments(form_id, output_dir = "~/Desktop")

# save using original file names
ns_get_form_attachments(form_id, filenames = "original")

## End(Not run)
```

ns_get_form_reports *Download files associated with a form*

Description

Each Nettskjema form has several auxiliary forms that can be retrieved.

Usage

```
ns_get_form_reports(
  form_id,
  type = c("csv", "excel", "spss"),
  path = report_path(form_id, type)
)
```

Arguments

form_id	integer. Number of the form to retrieve
type	Character. Either "csv", "excel" or "spss".
path	Character. Full path to where the downloaded file should be saved. Defaults to current directory with correct extension.

Value

httr2-response

Examples

```
## Not run:  
ns_get_form_reports(123823, type="csv")  
ns_get_form_reports(123823, type="excel")  
ns_get_form_reports(123823, type="spss")  
  
## End(Not run)
```

ns_get_me

Information about the current user

Description

Based on login credential, returns information on the user accessing the Nettskjema PI

Usage

```
ns_get_me()
```

Value

list of information

Examples

```
ns_get_me()
```

ns_get_meta	<i>Get metadata for a form</i>
-------------	--------------------------------

Description

With the given API token, will retrieve the meta-data connected to a form.

Usage

```
ns_get_meta(form_id)
```

Arguments

form_id integer. Number of the form to retrieve

Value

list of class ns_meta_data

Examples

```
ns_get_meta(123823)
```

ns_get_submission	<i>Get an individual submission answer</i>
-------------------	--

Description

Get an individual submission answer

Usage

```
ns_get_submission(submission_id)
```

Arguments

submission_id integer. Unique identifier of a specific Nettskjema submission.

Value

list of all answers

Examples

```
ns_get_submission(27685292)
```

`ns_get_submission_attachments`*Get Nettskjema attachments for a submission*

Description

Each unique submission ID in Nettskjema may have some attachments. This function saves all attachments associated with a submission ID.

Usage

```
ns_get_submission_attachments(  
  submission_id,  
  filenames = "standardized",  
  output_dir = paste0("./", submission_id)  
)
```

Arguments

<code>submission_id</code>	integer. Unique identifier of a specific Nettskjema submission.
<code>filenames</code>	Character of either 'standardized' (default) or 'original' indicating which file names to use.
<code>output_dir</code>	directory to output the files to

Value

a data.frame with information on attachments available, files written to path

Examples

```
## Not run:  
submission_id <- 22222  
ns_get_submission_attachments(submission_id)  
ns_get_submission_attachments(submission_id, "original")  
  
## End(Not run)
```

ns_get_token	<i>Get Current Nettskjema Access Token</i>
--------------	--

Description

Retrieves the current OAuth2 access token for debugging purposes, such as testing endpoints in Swagger UI. This function uses the client credentials flow to obtain the token. You will not normally need to call this function directly, as authentication is handled automatically.

Usage

```
ns_get_token(  
  client_id = Sys.getenv("NETTSKJEMA_CLIENT_ID"),  
  client_secret = Sys.getenv("NETTSKJEMA_CLIENT_SECRET"),  
  client_name = "nettskjemar"  
)
```

Arguments

client_id	Character. Retrieved from the Client portal.
client_secret	Character. Retrieved from the Client portal.
client_name	Character. Used to identify who has been running the commands.

Value

httr2 token object, list with access_token, token_type, and expires_in

Examples

```
## Not run:  
# Get token for Swagger debugging  
token <- ns_get_token()  
token$access_token  
  
## End(Not run)
```

ns_has_auth	<i>Check Environment Variables for Nettskjema Authentication</i>
-------------	--

Description

This function verifies whether the required system variables ('NETTSKJEMA_CLIENT_ID' and 'NETTSKJEMA_CLIENT_SECRET') are set to enable authentication with the Nettskjema API. It provides feedback on the setup status and returns whether the system is correctly configured.

Usage

```
ns_has_auth(  
  client_id = Sys.getenv("NETTSKJEMA_CLIENT_ID"),  
  client_secret = Sys.getenv("NETTSKJEMA_CLIENT_SECRET")  
)
```

Arguments

client_id [character] The client ID provided by Nettskjema.
client_secret [character] The client secret provided by Nettskjema.

Value

Logical. Returns 'TRUE' if both environment variables are set, otherwise 'FALSE'.

References

For more information about authentication setup, see: <https://www.capro.dev/nettskjemar/articles/authentication.html>

Examples

```
ns_has_auth()
```

ns_list_form_attachments

Retrieve all attachments associated with a Nettskjema

Description

Some Nettskjema have fields for attachments. These can be downloaded through this function. There are two naming convention that may be used for the saved files' names. See output of [ns_list_submission_attachments](#) for idea of the names used.

Usage

```
ns_list_form_attachments(form_id)
```

Arguments

form_id integer. Number of the form to retrieve

Details

filenames types

"original" - uses file names are they were uploaded to Nettskjema

"standardized" - creates file names based on the submission id and a counter number to uniquely create file names for each submission (in case there are more than one attachment)

Value

invisible named logical if the file was saved successfully

Examples

```
## Not run:  
form_id <- 1100000  
ns_list_form_attachments(form_id)
```

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

ns_list_submission_attachments

List Nettskjema attachments for a submission

Description

Each unique submission ID in Nettskjema may have some attachments. These can be listed using this function, which will provide the information on where in the Nettskjema API the files are located, their original file names, and a suggested standardized file names for tidier data output.

Usage

```
ns_list_submission_attachments(submission_id)
```

Arguments

submission_id integer. Unique identifier of a specific Nettskjema submission.

Value

a data.frame with information on attachments available.

Examples

```
## Not run:  
submission_id <- 22222  
ns_list_submission_attachments(submission_id)
```

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

ns_req	<i>Basic Nettskjema htr2 request</i>
--------	--------------------------------------

Description

Sets the API url and access token. This is used for almost all the functionality in this package. If you want to use endpoints not yet covered by functions in the package, this is the basis function you can build from.

Usage

```
ns_req(...)
```

Arguments

```
... arguments passed to ns_req_auth
```

Value

```
htr2 request
```

Examples

```
## Not run:  
ns_req() |>  
  htr2::req_url_path_append("me") |>  
  htr2::req_perform() |>  
  htr2::resp_body_json()  
  
## End(Not run)
```

ns_req_auth	<i>Authenticate Nettskjema request</i>
-------------	--

Description

After creating a client in Nettskjema, this function will retrieve the access token needed for the remaining processes in the package. Automatically caches the token for more efficient API usage.

Usage

```
ns_req_auth(  
  req,  
  client_id = Sys.getenv("NETTSKJEMA_CLIENT_ID"),  
  client_secret = Sys.getenv("NETTSKJEMA_CLIENT_SECRET"),  
  client_name = "nettskjemar"  
)
```

Arguments

req	An htrr2 request, usually <code>ns_req</code>
client_id	Character. Retrieved from the Client portal.
client_secret	Character. Retrieved from the Client portal.
client_name	Character. Used to identify who has been running the commands.

ns_sitrep	<i>Nettskjema API Sitrep</i>
-----------	------------------------------

Description

This function provides a situational report (sitrep) for the Nettskjema R package. It outputs detailed information on the package version, API configuration, environment variables, and tests API connectivity when credentials are available.

Usage

```
ns_sitrep()
```

Details

The function performs the following: - Displays the installed version of the 'nettskjemar' package. - Validates the 'NETTSKJEMA_CLIENT_ID' and 'NETTSKJEMA_CLIENT_SECRET' environment variables. - Checks the API base URL for connectivity and attempts a test request if credentials are configured. - Displays system environment details such as R version and operating system.

Value

No return value; the function outputs diagnostic and configuration status messages to the console.

Examples

```
ns_sitrep()
```

`ns_validate_client_pattern`*Validate Nettskjema Client Pattern*

Description

Validates the format of Nettskjema client identifiers such as the 'NETTSKJEMA_CLIENT_ID' or 'NETTSKJEMA_CLIENT_SECRET'. Returns 'TRUE' if the input matches the required format, and 'FALSE' otherwise.

Usage

```
ns_validate_client_pattern(x, type = c("id", "secret"))
```

```
ns_validate_client_id(x)
```

```
ns_validate_client_secret(x)
```

Arguments

x	A character string to validate.
type	The identifier type to validate ("id" or "secret").

Details

- "id" validation expects a UUID format: 'xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx'. - "secret" validation expects a 72-character alphanumeric string.

Value

A logical value: 'TRUE' if the input format is valid, otherwise

Functions

- `ns_validate_client_id()`: Validate Nettskjema Client ID
- `ns_validate_client_secret()`: Validate Nettskjema Client Secret

Examples

```
client_id <- "a1b2c3d4-e5f6-7890-abcd-ef1234567890"  
ns_validate_client_pattern(client_id,  
type = "id")  
ns_validate_client_id(client_id)
```

```
client_secret <- "aB3xK9mP2vQ8_R7nL98Mcs81sT4uY6wE5zC0hJ9i03kM8pN2qA7bD1gF4jH6lS-9vX3nR5mT" #nolint  
ns_validate_client_pattern(client_secret,  
type = "secret")
```

```
ns_validate_client_secret(client_secret)
```

```
ns_write_codebook      Write codebook to file
```

Description

Save codebook information to a file for safe keeping. Depending on the type of codebook (raw or tidy) the file will either be stored as a json-file through [write_json](#) or a text table through [write.table](#).

Usage

```
ns_write_codebook(codebook, path, ...)

## Default S3 method:
ns_write_codebook(codebook, path, ...)

## S3 method for class 'ns_codebook_raw'
ns_write_codebook(codebook, path, ...)

## S3 method for class 'ns_codebook'
ns_write_codebook(codebook, path, sep = "\t", ...)
```

Arguments

codebook	object of class ns_codebook
path	filename or path
...	arguments to write_json or write.table
sep	character. If writing text table, column delimiter.

Details

Given the two types of codebooks, writes different types of files.

codebook - writes a tab-separated table

codebook_raw - writes a json-file

Value

no return value. Writes a file to path.

Examples

```
## Not run:
form_id <- 1100000
my_cb <- ns_get_codebook(form_id)
ns_write_codebook(my_cb, "my/path/codebook_110000.txt")

## End(Not run)
```

ns_write_meta	<i>Write meta-data to file</i>
---------------	--------------------------------

Description

Save meta-data information to a file for safe keeping. The function saves the data in json-format, which best preserves the information.

Usage

```
ns_write_meta(meta, path, ...)

## Default S3 method:
ns_write_meta(meta, path, ...)

## S3 method for class 'ns_meta'
ns_write_meta(meta, path, ...)
```

Arguments

meta	object of class ns_meta class
path	file name or path
...	other arguments to write_json

Value

no return value. Writes a file to path.

Examples

```
## Not run:
form_id <- 1100000
my_meta <- ns_get_meta(form_id)
ns_write_meta(my_meta, "my/path/meta_110000.json")

## End(Not run)
```

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