

# Package ‘restatis’

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**Title** R Wrapper to Access a Wide Range of Germany's Federal Statistical System Databases Based on the GENESIS Web Service RESTful API of the German Federal Statistical Office (Statistisches Bundesamt/Destatis)

**Version** 0.4.0

**Description** A RESTful API wrapper for accessing the main databases of Germany's Federal Statistical System. Supports data search functions, credential management, result caching, and handling remote background jobs for large datasets.

**License** MIT + file LICENSE

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<https://github.com/CorrelAid/restatis>

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**Author** Yannik Buhl [aut, cre],  
Zoran Kovacevic [aut] (ORCID: <<https://orcid.org/0009-0002-0156-0862>>),  
Dorian Le Jeune [aut],  
Long Nguyen [aut] (ORCID: <<https://orcid.org/0000-0001-8878-7386>>),  
Johannes Ritter [aut],  
Stefan Linner [ctb]

**Maintainer** Yannik Buhl <ybuhl@posteo.de>

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.gen\_api\_core                      *Basic API request function*

**Description**

(Uncached) Low-level function to interact with the one of the APIs

**Usage**

```
.gen_api_core(endpoint, database, credential_list = NULL, ...)
```

**Arguments**

- endpoint                      Character string. The endpoint of the API that is to be queried.
- database                      The database the query should be sent to.
- credential\_list                A named list including username and password for the database(s) to be queried. If NULL (default), the function will try to get credentials from the environment variables.
- ...                              Further parameters passed on to the final API call.

binding\_lapply      *binding\_lapply*

---

**Description**

binding\_lapply

**Usage**

```
binding_lapply(x, characteristics)
```

**Arguments**

x	Element to bind
characteristics	Characteristics to filter for

---

check\_credential\_list\_standalone  
*Function to check if credential list provided is valid*

---

**Description**

Function to check if credential list provided is valid

**Usage**

```
check_credential_list_standalone(credential_list, database)
```

**Arguments**

credential_list	Credential list to be checked
database	Database that is used for authentication

---

check\_function\_input    *check\_function\_input*

---

## Description

check\_function\_input

## Usage

```
check_function_input(  
  code = NULL,  
  term = NULL,  
  sortcriterion = NULL,  
  category = NULL,  
  detailed = NULL,  
  type = NULL,  
  date = NULL,  
  similarity = NULL,  
  error.ignore = NULL,  
  ordering = NULL,  
  pagelength = NULL,  
  database = NULL,  
  area = NULL,  
  caller = NULL,  
  verbose = NULL,  
  raw = NULL  
)
```

## Arguments

code	Parameter to be checked
term	Parameter to be checked
sortcriterion	Parameter to be checked
category	Parameter to be checked
detailed	Parameter to be checked
type	Parameter to be checked
date	Parameter to be checked
similarity	Parameter to be checked
error.ignore	Parameter to be checked
ordering	Parameter to be checked
pagelength	Parameter to be checked
database	Parameter to be checked
area	Parameter to be checked

caller	Parameter to be checked
verbose	Parameter to be checked
raw	Parameter to be checked

---

check_results	<i>check_results</i>
---------------	----------------------

---

**Description**

check\_results

**Usage**

check\_results(input)

**Arguments**

input	Input to test result structure
-------	--------------------------------

---

evas_list	<i>List of EVAS Codes</i>
-----------	---------------------------

---

**Description**

List of EVAS Codes

**Usage**

evas\_list

**Format**

evas\_list:

A data frame with 1132 rows and 3 columns:

**EVAS** EVAS code

**Beschreibung** Details on the EVAS code

**Titel** Alternative description of EVAS code contents

**Source**

<https://www.destatis.de/DE/Methoden/Revisionen/Glossar/EVAS.html>

---

find_token	<i>find_token</i>
------------	-------------------

---

**Description**

find\_token

**Usage**

find\_token(input, error.input, text, sub\_category)

**Arguments**

input	Input to test result structure
error.input	error.ignore TRUE or FALSE
text	verbose TRUE or FALSE
sub_category	sub_category character string

---

forming_evas	<i>forming_evas</i>
--------------	---------------------

---

**Description**

forming\_evas

**Usage**

forming\_evas(list\_of)

**Arguments**

list_of	List of EVAS to iterate over
---------	------------------------------

---

gen\_alternative\_terms *Find Similar Search Terms*


---

**Description**

Function to find search terms that are similar or related to one another in spelling and also represented in the databases supported by **restatis**. Important note: The API call is searching for terms with the same characters. To be useful in searching for related terms it is highly recommended to work with \* placeholders (see examples). The placeholder can be placed before and/or after the search term.

**Usage**

```
gen_alternative_terms(
  term = NULL,
  similarity = TRUE,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
  pagelength = 500,
  verbose = TRUE,
  ...
)
```

**Arguments**

term	Character string. Maximum length of 15 characters. Term or word for which you are searching for alternative or related terms. Use of * as a placeholder is possible to generate broader search areas.
similarity	Boolean. Indicator if the output of the function should be sorted based on a Levenshtein edit distance based on the <code>adist()</code> function. Default is 'TRUE'.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from <code>gen_auth_get()</code> .
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see <code>vignette("additional_parameter")</code> .

**Value**

A list with all recollected elements from the respective database. Attributes are added to the data.frame, describing the search configuration for the returned output.

**Examples**

```
## Not run:
# Find terms at GENESIS that are the same (in spelling) to search term "bus"
# and sort them by Levenshtein edit distance
object <- gen_alternative_terms(term = "bus", similarity = TRUE, database = "genesis")

# Find terms at GENESIS that are related (in spelling) to search term "bus"
object <- gen_alternative_terms(term = "bus*", similarity = TRUE, database = "genesis")

# Find terms at Zensus 2022 that are related (in spelling) to search term "wohn"
object <- gen_alternative_terms(term = "wohn*", similarity = TRUE, database = "zensus")

## End(Not run)
```

---

gen\_auth\_ask

*Helper function for authentication purposes*

---

**Description**

Helper function for authentication purposes

**Usage**

```
gen_auth_ask(credential_type)
```

**Arguments**

credential\_type

Character string. Type of credential to ask for

**Value**

The user response

gen\_auth\_get                      *Retrieve database credentials*

---

**Description**

Function to retrieve the credentials stored via gen\_auth\_save()

**Usage**

```
gen_auth_get(database = NULL)
```

**Arguments**

database                      Character string. The database to get the credentials for ('all', 'genesis', 'zensus' and 'regio').

**Value**

Credentials for the database(s) chosen by the user

**Examples**

```
## Not run:  
gen_auth_get("all")  
  
## End(Not run)
```

---

gen\_auth\_path                      *Helper function for authentication purposes*

---

**Description**

Helper function for authentication purposes

**Usage**

```
gen_auth_path(...)
```

**Arguments**

...                      Optional arguments for file.path()

**Value**

A file path for the storage of config files

---

gen_auth_save	<i>Save database credentials</i>
---------------	----------------------------------

---

## Description

Save credentials of the different databases for further convenient use

## Usage

```
gen_auth_save(database, use_token = FALSE)
```

## Arguments

database	Character string. The database to store credentials for ('all', 'genesis', 'zensus', 'regio', 'bayern', 'nrw', 'bildung' or 'st').
use_token	Boolean. Do you want to (if possible) set an API token instead of password + username? Note: This is only supported by 'genesis' and 'zensus'. Defaults to FALSE.

## Details

Username and password are encrypted and saved as RDS in the package config directory. A random string is generated and stored in the session environment variable GENESIS\_KEY. This string is used as the key to encrypt and decrypt the entered credentials. To avoid having to save authentication in future sessions, GENESIS\_KEY can be added to .Renviron. The {usethis} package includes a helper function for editing .Renviron files from an R session with `usethis::edit_r_environ()`.

## Value

Path to the RDS file in which credentials are saved, invisibly.

## Examples

```
## Not run:  
gen_auth_save("zensus")  
  
## End(Not run)
```

**Description**

Function to search for tables, statistics and cubes from the respective database. Additionally, it structures the output based on the internal tree structure based on the EVAS numbers. Time-series are represented as cubes with a specified time span. Important note: To be useful in searching for objects it is highly recommended to work with "\*" placeholders (see examples). The placeholder can be placed before and/or after the search term.

**Usage**

```
gen_catalogue(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  category = c("tables", "statistics", "cubes"),
  area = c("all", "public", "user"),
  detailed = FALSE,
  sortcriterion = c("code", "content"),
  credential_list = NULL,
  pagelength = 500,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)
```

**Arguments**

code	String with a maximum length of 15 characters. Only one code per iteration. "*" notations are possible.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
category	Character string. Specify specific object types ('tables', 'statistics' and 'cubes'). Note that 'zensus' does not support 'cubes'. All types that are specific for one database can be used together. Default option is to use all types that are possible for the specific database.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
detailed	Boolean. Indicator if the function should return the detailed output of the iteration including all object-related information or only a shortened output including only code and object title. Default option is 'FALSE'.

sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

### Value

A list with all recalled elements from the API. Based on the 'detailed' parameter, it contains more or less information, but always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Scroll through objects under the topic "12*"
# which is "Bevoelkerung" in GENESIS from all categories and
# with a detailed output
object <- gen_catalogue(code = "12*", detailed = TRUE)

# Search tables under the topic "12*" which is "Bevoelkerung"
# without a detailed output
object <- gen_catalogue(code = "12*", category = "tables")

## End(Not run)
```

---

gen\_cube

*Download Data Cube As Data.Frame*


---

### Description

Download a cube as a data.frame from any supported database. Works not on all databases included in the package.

**Usage**

```

gen_cube(
  name,
  database = c("genesis", "regio", "nrw", "bildung"),
  credential_list = NULL,
  area = c("public", "user"),
  values = TRUE,
  metadata = TRUE,
  additional = FALSE,
  startyear = 1900,
  endyear = 2100,
  timeslices = NULL,
  contents = NULL,
  regionalvariable = NULL,
  regionalkey = NULL,
  classifyingvariable1 = NULL,
  classifyingkey1 = NULL,
  classifyingvariable2 = NULL,
  classifyingkey2 = NULL,
  classifyingvariable3 = NULL,
  classifyingkey3 = NULL,
  stand = NULL,
  language = Sys.getenv("RESTATIS_LANG"),
  ...
)

```

**Arguments**

name	Character string for a cube object.
database	Character string. Indicator if the GENESIS ('genesis'), regionalstatistik.de ('regio'), landesdatenbank.nrw.de ('nrw') or bildungsmonitoring.de ('bildung') database is called.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. The area in which the table is stored. Possible values: <ul style="list-style-type: none"> <li>• "public": cube in the public catalogue</li> <li>• "user": cube in the user's account</li> <li>• "all": both of the above</li> </ul>
values	Boolean. Should values be included?
metadata	Boolean. Should metadata be included?
additional	Boolean. Should additional metadata be included?
startyear	Four-digit integer. Only retrieve data from this year onward.
endyear	Four-digit integer. Only retrieve data up to this year.
timeslices	Integer. Number of timeslices (cumulative to startyear or endyear).

contents	Character string. Names of required statistical specifications.
regionalvariable	Character string. Code of the regional variable whose value is specified in regionalkey to filter the results.
regionalkey	Character string. One or more regional keys. Multiple values can be supplied as a character vector or as a single string, with the regional keys separated by commas. Use of wildcard (*) allowed.
classifyingvariable1	Character string. Code of the subject classification (SK-Merkmal) to which the selection by means of classifyingkey1 is applied.
classifyingkey1	Character string. One or more values of a subject classification (e.g. "WZ93012"). Applied to classifyingvariable1. Multiple keys can be supplied as a character vector or as a single string, with the keys separated by commas. Use of wildcard (*) allowed.
classifyingvariable2	Character string. Code of the subject classification (SK-Merkmal) to which the selection by means of classifyingkey2 is applied.
classifyingkey2	Character string. One or more values of a subject classification. Applied to classifyingvariable2. Multiple keys can be supplied as a character vector or as a single string, with the keys separated by commas. Use of wildcard (*) allowed.
classifyingvariable3	Character string. Code of the subject classification (SK-Merkmal) to which the selection by means of classifyingkey3 is applied.
classifyingkey3	Character string. One or more values of a subject classification. Applied to classifyingvariable3. Multiple keys can be supplied as a character vector or as a single string, with the keys separated by commas. Use of wildcard (*) allowed.
stand	Character string, format "DD.MM.YYYY". Only retrieve data updated after this date.
language	Character string. Search terms, returned messages and data descriptions in German ("de") or English ("en").
...	Additional parameters for the API call (see respective API documentation). A valid specification of these will not be checked by the function, so wrongful specification may lead to errors.

### Value

A [tibble](#). Non-data contents of the data cube object are saved in the metadata [attribute](#) of the data frame.

**Examples**

```
## Not run:
gen_cube("47414BJ002")

## End(Not run)
```

---

gen\_download\_job      *Download Jobs That Have Finished Processing*

---

**Description**

Download Jobs That Have Finished Processing

**Usage**

```
gen_download_job(
  name,
  database = c("genesis", "regio", "bayern", "st", "nrw", "bildung"),
  credential_list = NULL,
  area = c("all", "public", "user"),
  compress = FALSE,
  language = Sys.getenv("RESTATIS_LANG"),
  all_character = TRUE
)
```

**Arguments**

name	Character string. The job code retrieved by using gen_list_jobs().
database	Character string. Indicator which database should be called. Only one database can be addressed per function call ('regio', 'genesis', 'bayern', 'st', 'nrw' or 'bildung'). Default option is 'genesis'. 'zensus' does not support jobs.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'.
compress	Boolean. Should empty rows and columns be discarded? Default is FALSE.
language	Character string. Defines if the decimal mark and grouping mark of integers should be represented based on the European (e.g.: '100,5', '200.000,5') or American ('100.5', '200,000.5') system. Defaults to 'Sys.getenv("RESTATIS_LANG")'.
all_character	Boolean. Should all variables be imported as 'character' variables? Avoids fuzzy data type conversions if there are leading zeros or other special characters. Defaults to TRUE.

**Value**

Returns a data.frame with the table content

**Examples**

```
## Not run:
gen_download_job("21311-00-01-1_123456789", "regio")

## End(Not run)
```

---

gen\_find

*General Search For Objects Through A Database*

---

**Description**

Function to search through the databases. It is similar in usage as the search function on the main page. In the search query, "UND" (German word for 'and', also written "und" or "&") as well as "ODER" (German word for 'or', also written "oder" or "|") can be included and logically combined. Furthermore, wildcards are possible by including "\*". If more than one word is included in the term string, 'and' is used automatically to combine the different words. Important note: Time-series are treated as cubes in GENESIS and regionalstatistik.de, they are not longer distinguished. If you want to find a specific object with a clear code with this find function, you need to specify the object type or search for all object types.

**Usage**

```
gen_find(
  term = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  category = c("all", "tables", "statistics", "variables", "cubes"),
  detailed = FALSE,
  ordering = TRUE,
  credential_list = NULL,
  pagelength = 500,
  error.ignore = TRUE,
  verbose = TRUE,
  ...
)
```

**Arguments**

**term** A character string with no maximum character length, but a word limit of five words.

database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
category	Character string. Specify specific object types ('tables', 'statistics' and 'cubes'). Note that 'zensus' does not support 'cubes'. All types that are specific for one database can be used together. Default option is to use all types that are possible for the specific database.
detailed	Boolean. Indicator if the function should return the detailed output of the iteration including all object-related information or only a shortened output including only code and object title. Default option is 'FALSE'.
ordering	A logical. Indicator if the function should return the output of the iteration ordered first based on the fact if the searched term is appearing in the title of the object and secondly on an estimator of the number of variables in this object. Default option is 'TRUE'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'TRUE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

## Value

A list with all recalled elements from the API. Based on the 'detailed' parameter it contains more or less information, but always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

## Examples

```
## Not run:
# Find objects related to "bus" in GENESIS
object <- gen_find(term = "bus")

# Find tables related to "bus" in GENESIS and return a unordered detailed output
object <- gen_find(term = "bus", detailed = TRUE, ordering = FALSE)
```

```
# Find tables related to "Autos" or "Corona" in GENESIS and return a unordered detailed output
object <- gen_find(term = "autos ODER corona", detailed = TRUE, ordering = FALSE)

#' # Find tables related to "Autos" and "Corona" in GENESIS and return a unordered detailed output
object <- gen_find(term = "autos UND corona", detailed = TRUE, ordering = FALSE)

## End(Not run)
```

---

gen\_list\_jobs

*Download List Of Active Download Jobs*


---

### Description

Function to list all current jobs connected to the given user. Important note: For this function it is also possible to use searchcriterion parameter and selection parameter, making it possible to filter the job list based on 'type','time','status' or 'code'. For more details see vignette("additional\_parameter").

### Usage

```
gen_list_jobs(
  database,
  sortcriterion = c("type", "time", "status", "code"),
  flat = FALSE,
  credential_list = NULL,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)
```

### Arguments

database	Character string. Indicator which database should be called. Accepts only one database ('regio', 'genesis', 'bayern', 'st', 'nrw' or 'bildung'). 'zensus' does not support jobs.
sortcriterion	Character string. Indicator if the output should be sorted by 'type','time','status' or 'code'. This is a parameter of the API call itself. The default is 'type'.
flat	Boolean. Should the function return a list with jobs and metadata ('FALSE') or just a flat data.frame ('TRUE')? Defaults to FALSE.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.

verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

### Details

Important information concerning the caching of results: This function's results are *never* cached because there is no use-case for a cached list of jobs (users would always want a refreshed list of jobs and their respective status).

### Value

A list or data.frame (see parameter 'flat') of all current jobs of the user.

### Examples

```
## Not run:
gen_list_jobs("regio", flat = TRUE)

## End(Not run)
```

---

gen_logincheck	<i>Check If User Can Connect To Service</i>
----------------	---

---

### Description

Function to check if a login is possible for a certain database.

### Usage

```
gen_logincheck(database = "all", verbose = TRUE, ...)
```

### Arguments

database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
verbose	Boolean. In case of success, should a message be printed? Defaults to 'TRUE'.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

**Value**

Leads to an informative error message if the login check failed and returns FALSE invisibly. Invisibly returns TRUE otherwise.

**Examples**

```
## Not run:
gen_logincheck("zensus")

## End(Not run)
```

---

gen\_metadata

*Search For Meta-Information For All Types Of Objects*


---

**Description**

Search for metadata-information for all types of objects and databases and have them returned as a list.

**Usage**

```
gen_metadata(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  category = c("cube", "statistic", "table", "variable", "value"),
  credential_list = NULL,
  area = c("all", "public", "user"),
  error.ignore = FALSE,
  verbose = TRUE,
  raw = FALSE,
  ...
)
```

**Arguments**

code	String with a maximum length of 15 characters for a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
category	Character string. Specifying the specific object type of the object that you want meta data for. No default option - you need to specify the object type. Hint: The functions in 'restatis' often return information on object 'Type'.

credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
raw	Boolean. Should a non-parsed API response be returned? Default option is 'FALSE'.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

### Value

A list with all recalled elements from the API. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find meta-information of the table with the code "11111"
object <- gen_metadata(code = "11111", category = "table", database = "genesis")

## End(Not run)
```

---

gen_metadata_cube	<i>gen_metadata_cube</i>
-------------------	--------------------------

---

### Description

Function to search for meta information for a specific cube. Usable only for GENESIS and regionalstatistik.de.

### Usage

```
gen_metadata_cube(
  code = NULL,
  database = c("all", "genesis", "regio", "nrw", "bildung"),
```

```

    credential_list = NULL,
    area = c("all", "public", "user"),
    error.ignore = FALSE,
    verbose = TRUE,
    raw = FALSE,
    ...
)

```

## Arguments

code	A character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), regionalstatistik.de ('regio'), landesdatenbank.nrw.de ('nrw') or bildungsmonitoring.de ('bildung') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
raw	Boolean. Should a non-parsed API response be returned? Default option is 'FALSE'.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

## Value

A list with all recalled elements from the API. Attributes are added to the data.frame describing the search configuration for the returned output.

## Examples

```

## Not run:
# Find meta-information of the cube with the code "11111KE001"
object <- gen_metadata_cube(code = "11111KE001")

## End(Not run)

```

---

```
gen_metadata_statistic
    gen_metadata_statistic
```

---

## Description

Function to search for meta information for a specific statistic.

## Usage

```
gen_metadata_statistic(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
  area = c("all", "public", "user"),
  error.ignore = FALSE,
  verbose = TRUE,
  raw = FALSE,
  ...
)
```

## Arguments

code	A character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
raw	Boolean. Should a non-parsed API response be returned? Default option is 'FALSE'.

... Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional\_parameter").

### Value

A list with all recalled elements from the API. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find meta-information of the statistic with the code "12411"
object <- gen_metadata_stats(code = "12411")

## End(Not run)
```

---

gen\_metadata\_table      *gen\_metadata\_table*

---

### Description

Function to search for meta information for a specific table.

### Usage

```
gen_metadata_table(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
  area = c("all", "public", "user"),
  error.ignore = FALSE,
  verbose = TRUE,
  raw = FALSE,
  ...
)
```

### Arguments

code	A character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.

credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
raw	Boolean. Should a non-parsed API response be returned? Default option is 'FALSE'.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

### Value

A list with all recalled elements from the API. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find meta-information of the table with the code "11111"
object <- gen_metadata_tab(code = "11111")

## End(Not run)
```

---

gen\_metadata\_value      *gen\_metadata\_value*

---

### Description

Function to search for meta information for a specific value.

### Usage

```
gen_metadata_value(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
```

```

    area = c("all", "public", "user"),
    error.ignore = FALSE,
    verbose = TRUE,
    raw = FALSE,
    ...
)

```

### Arguments

code	A character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
raw	Boolean. Should a non-parsed API response be returned? Default option is 'FALSE'.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

### Value

A list with all recalled elements from the API. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```

## Not run:
# Find meta-information of the value with the code "LEDIG"
object <- gen_metadata_val(code = "LEDIG")

## End(Not run)

```

---

gen\_metadata\_variable *gen\_metadata\_variable*

---

## Description

Function to search for meta information for a specific variable.

## Usage

```
gen_metadata_variable(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
  area = c("all", "public", "user"),
  error.ignore = FALSE,
  verbose = TRUE,
  raw = FALSE,
  ...
)
```

## Arguments

code	A character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from <code>gen_auth_get()</code> .
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
raw	Boolean. Should a non-parsed API response be returned? Default option is 'FALSE'.

... Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional\_parameter").

### Value

A list with all recalled elements from the API. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find meta-information of the variable with the code "FAMSTD"
object <- gen_metadata_var(code = "FAMSTD")

## End(Not run)
```

---

gen\_modified\_data      *Check Objects For Updates And Changes*

---

### Description

Function to check for updates, changes, or new objects based on a specific date.

### Usage

```
gen_modified_data(
  code = "",
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  type = c("all", "tables", "statistics", "statisticsUpdates"),
  date = c("now", "week_before", "month_before", "year_before"),
  credential_list = NULL,
  pagelength = 500,
  verbose = TRUE,
  ...
)
```

### Arguments

code	A character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.

type	Character string. Specific GENESIS and regionalstatistik.de object types: 'tables', 'statistics', and 'statisticsUpdates'. Specific Zensus 2022 object types: 'tables' and 'statistics'. All types that are specific for one database can be used together through 'all', which is the default.
date	Character string. Specific date that is used as the last update or upload time to include an object in return. Default option is 'now', which uses the current date of your system. Alternative options are 'week_before', using the current date of your system minus 7 days, 'month_before', using the current date of your system minus 4 weeks, and 'year_before', using the current date of your system minus 52 weeks. Additionally, it is possible to fill in a specific date of format 'DD.MM.YYYY'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

## Value

A list with all recalled elements from the API. Always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

## Examples

```
## Not run:
# Find objects which were modified last_week
object <- gen_modified_data(date = "week_before")

# Find tables that were new from 31.03.2020
object <- gen_modified_data(type = "tables", date = "31.03.2020")

# Find objects related to the topic "Bevoelkerung" (Code: '12*') which were new today
object <- gen_modified_data(code = "12*")

## End(Not run)
```

---

gen\_objects2stat      *Find Objects Related To A Statistic*

---

### Description

Function to find objects related to a statistic. This is interesting to get an overview of a statistic's usage.

### Usage

```
gen_objects2stat(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  category = c("tables", "variables", "cubes"),
  area = c("all", "public", "user"),
  detailed = FALSE,
  sortcriterion = c("code", "content"),
  credential_list = NULL,
  pagelength = 500,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)
```

### Arguments

code	Character string with a maximum length of 6 characters (15 characters if 'cubes' are not used as a category). Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
category	Character string. Specify specific object types ('tables', 'statistics' and 'cubes'). All types that are specific for one database can be used together. Default option is to use all types that are possible for the specific database.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
detailed	Boolean. Indicator if the function should return the detailed output of the iteration including all object-related information or only a shortened output including only code and object title. Default option is 'FALSE'.
sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.

credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

### Value

A list with all recalled elements from the API. Based on the 'detailed' parameter it contains more or less information, but always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find cubes from the statistic with the code "21111" with a detailed return
object <- gen_objects2stat(code = "21111", category = "cubes", detailed = T)

# Find all object types from the statistic with the code "12411"
object <- gen_objects2stat(code = "12411")
# Default of detailed-parameter is FALSE, and default of the
# category-parameter is to include all object types.

## End(Not run)
```

---

gen\_objects2var

*Find Objects Related To A Variable*

---

### Description

Function to find objects related to a variable. This is interesting to get an overview of a variable's usage.

**Usage**

```

gen_objects2var(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  category = c("tables", "statistics", "cubes"),
  area = c("all", "public", "user"),
  detailed = FALSE,
  sortcriterion = c("code", "content"),
  credential_list = NULL,
  pagelength = 500,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)

```

**Arguments**

code	Character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
category	Character string. Specify specific object types ('tables', 'statistics' and 'cubes'). All types that are specific for one database can be used together. Default option is to use all types that are possible for the specific database.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
detailed	Boolean. Indicator if the function should return the detailed output of the iteration including all object-related information or only a shortened output including only code and object title. Default option is 'FALSE'.
sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.

verbose        Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.

...            Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional\_parameter").

### Value

A list with all recalled elements from the API. Based on the 'detailed' parameter it contains more or less information, but always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find Tables for Variable "Kreise" and return detailed output
object <- gen_objects2var(code = "Kreise", category = "tables", detailed = T)

# Find everything for Variable "GES"
object <- gen_objects2var(code = "GES")
# Default of detailed-parameter is FALSE, and default of the
# category-parameter is to include all object types.

## End(Not run)
```

---

gen\_search\_vars        *Search For Variables*

---

### Description

Function to search for specific variables. This function gathers metadata, no actual data. It helps to refine data calls.

### Usage

```
gen_search_vars(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  area = c("all", "public", "user"),
  sortcriterion = c("code", "content"),
  credential_list = NULL,
  pagelength = 500,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)
```

**Arguments**

code	Character string with a maximum length of 6 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

**Value**

A list with all recalled elements from the API. Always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

**Examples**

```
## Not run:
# Find a specific variable "GES" in Genesis
object <- gen_search_vars("GES")

## End(Not run)
```

gen\_signs

*List Currently Used Special Signs***Description**

Function to list all currently used special signs (e.g., 0, \*, X, (), p, ...) and their meaning in the respective database.

**Usage**

```
gen_signs(
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)
```

**Arguments**

database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. In case of success, should a message be printed? Defaults to 'TRUE'.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

**Value**

A list of all current used special signs.

---

gen_table	<i>Download Table As Data.Frame</i>
-----------	-------------------------------------

---

### Description

Download a table with data from one of the supported databases. This is the main function to fetch data, apart from `gen_cube`.

### Usage

```
gen_table(
  name,
  database = c("genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  credential_list = NULL,
  area = c("all", "public", "user"),
  compress = FALSE,
  transpose = FALSE,
  startyear = 1900,
  endyear = 2100,
  regionalvariable = NULL,
  regionalkey = NULL,
  classifyingvariable1 = NULL,
  classifyingkey1 = NULL,
  classifyingvariable2 = NULL,
  classifyingkey2 = NULL,
  classifyingvariable3 = NULL,
  classifyingkey3 = NULL,
  stand = NULL,
  language = Sys.getenv("RESTATIS_LANG"),
  job = FALSE,
  all_character = TRUE,
  ...
)
```

### Arguments

<code>name</code>	Character string. Name/code of the table. Use of wildcards (*) is possible.
<code>database</code>	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called.
<code>credential_list</code>	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from <code>gen_auth_get()</code> .
<code>area</code>	Character string. The area in which the table is stored. Possible values: <ul style="list-style-type: none"> <li>• "public": table in the public catalogue</li> </ul>

	<ul style="list-style-type: none"> <li>• "user": table in the user's account</li> <li>• "all": both of the above</li> </ul>
compress	Boolean. Should empty rows and columns be discarded?
transpose	Boolean. Reshape the table between "wide" and "long" format.
startyear	Four-digit integer. Only retrieve data from this year onward.
endyear	Four-digit integer. Only retrieve data up to this year.
regionalvariable	Character string. Code of the regional variable whose value is specified in regionalkey to filter the results.
regionalkey	Character string. One or more regional keys. Multiple values can be supplied as a character vector or as a single string, with the regional keys separated by commas. Use of wildcard (*) allowed.
classifyingvariable1	Character string. Code of the subject classification (SK-Merkmal) to which the selection by means of classifyingkey1 is applied.
classifyingkey1	Character string. One or more values of a subject classification (e.g. "WZ93012"). Applied to classifyingvariable1. Multiple keys can be supplied as a character vector or as a single string, with the keys separated by commas. Use of wildcard (*) allowed.
classifyingvariable2	Character string. Code of the subject classification (SK-Merkmal) to which the selection by means of classifyingkey2 is applied.
classifyingkey2	Character string. One or more values of a subject classification. Applied to classifyingvariable2. Multiple keys can be supplied as a character vector or as a single string, with the keys separated by commas. Use of wildcard (*) allowed.
classifyingvariable3	Character string. Code of the subject classification (SK-Merkmal) to which the selection by means of classifyingkey3 is applied.
classifyingkey3	Character string. One or more values of a subject classification. Applied to classifyingvariable3. Multiple keys can be supplied as a character vector or as a single string, with the keys separated by commas. Use of wildcard (*) allowed.
stand	Character string, format "DD.MM.YYYY". Only retrieve data updated after this date.
language	Character string. Search terms, returned messages and data descriptions in German ("de") or English ("en").
job	Boolean. Indicate whether a job should be created (not available with the "Zensus" database). To set job = TRUE, username and password must be saved with gen_auth_save(); using API tokens with job = TRUE will result in an error.

all\_character Boolean. Should all variables be imported as character variables? Avoids fuzzy data type conversions if there are leading zeros or other special characters. Defaults to TRUE.

... Additional parameters for the API call (see respective API documentation). A valid specification of these will not be checked by the function, so wrongful specification may lead to errors.

**Value**

A [tibble](#).

**Examples**

```
## Not run:
gen_table("21311-0001", database = "genesis")

## End(Not run)
```

---

gen_update_evas	<i>Update EVAS Database</i>
-----------------	-----------------------------

---

**Description**

Function to web scrape the EVAS numbers from the EVAS website and save them as a .rda file. Takes no parameters, only rarely necessary.

**Usage**

```
gen_update_evas()
```

**Value**

An updated .rda file containing the latest EVAS numbers, used internally.

---

gen_val2var	<i>Extract Values From Variable</i>
-------------	-------------------------------------

---

**Description**

Function to extract the possible values from a variable. Values for continuous variables are not extractable, which is why the function returns a warning message in this case. This function gathers metadata, no actual data. It helps to refine data calls.

**Usage**

```

gen_val2var(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  area = c("all", "public", "user"),
  sortcriterion = c("code", "content"),
  credential_list = NULL,
  pagelength = 500,
  error.ignore = TRUE,
  verbose = TRUE,
  ...
)

```

**Arguments**

code	Character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'TRUE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

**Value**

A list with all recalled elements from the API. Always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are

added to the data.frame describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find the values of the variable "DLAND"
object <- gen_val2var(code = "DLAND")

## End(Not run)
```

---

gen\_val2var2stat

*Get Values From Variables Of A Statistic*

---

### Description

Get values from variables from a statistic. Values for continuous variables cannot be extracted, so the function returns a warning message. This function gathers metadata, no actual data. It helps to refine data calls.

### Usage

```
gen_val2var2stat(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  area = c("all", "public", "user"),
  detailed = FALSE,
  credential_list = NULL,
  sortcriterion = c("code", "content"),
  pagelength = 500,
  error.ignore.var = FALSE,
  error.ignore.val = TRUE,
  verbose = TRUE,
  ...
)
```

### Arguments

code	Character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.

detailed	Boolean. Indicator if the function should return the detailed output of the iteration including all object-related information or only a shortened output including only code and object title. Default option is 'FALSE'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.
error.ignore.var	Boolean. Indicator for variables if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
error.ignore.val	Boolean. Indicator for values if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'TRUE', this prevents the function to stop even if a variable has no further explanation (often the case for numerical variables). Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if error.ignore is set to TRUE.
verbose	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
...	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see vignette("additional_parameter").

## Value

A list with all recalled elements from the API. Based on the 'detailed' parameter it contains more or less information, but always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the data.frame describing the search configuration for the returned output.

## Examples

```
## Not run:
# Find the values of variables in a specific statistic with
# the code "21111" and a detailed description of the variables
object <- gen_val2var2stat(code = "21111", detailed = TRUE)

## End(Not run)
```

---

gen\_var2stat                      *Generate Variables From Statistics*

---

### Description

Function to generate variable information from a statistic. This function gathers metadata, no actual data. It helps to refine data calls.

### Usage

```
gen_var2stat(
  code = NULL,
  database = c("all", "genesis", "zensus", "regio", "bayern", "nrw", "bildung", "st"),
  area = c("all", "public", "user"),
  detailed = FALSE,
  sortcriterion = c("code", "content"),
  credential_list = NULL,
  pagelength = 500,
  error.ignore = FALSE,
  verbose = TRUE,
  ...
)
```

### Arguments

code	Character string with a maximum length of 15 characters. Code from a database object. Only one code per iteration.
database	Character string. Indicator if the GENESIS ('genesis'), Zensus 2022 ('zensus'), regionalstatistik.de ('regio'), statistikdaten.bayern.de ('bayern'), landesdatenbank.nrw.de ('nrw'), bildungsmonitoring.de ('bildung') or genesis.sachsen-anhalt.de ('st') database is called. If all databases should be checked, use 'all'. Default option is 'all'.
area	Character string. Indicator from which area of the database the results are called. In general, 'all' is the appropriate solution. Default option is 'all'. Not used for 'statistics'.
detailed	Boolean. Indicator if the function should return the detailed output of the iteration including all object-related information or only a shortened output including only code and object title. Default option is 'FALSE'.
sortcriterion	Character string. Indicator if the output should be sorted by 'code' or 'content'. This is a parameter of the API call itself. The default is 'code'.
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from gen_auth_get().
pagelength	Integer. Maximum length of results or objects (e.g., number of tables). Defaults to 500. Maximum of the databases is 25,000 objects.

<code>error.ignore</code>	Boolean. Indicator if the function should stop if an error occurs or no object for the request is found or if it should produce a token as response. Default option is 'FALSE'. Important note: This does not apply to errors generated by the API call itself (especially server or client errors with status codes 5xx or 4xx). In this case, the function call will error even if <code>error.ignore</code> is set to TRUE.
<code>verbose</code>	Boolean. Indicator if the output of the function should include detailed messages and warnings. Default option is 'TRUE'. Set the parameter to 'FALSE' to suppress additional messages and warnings.
<code>...</code>	Additional parameters for the API call. These parameters are only affecting the call itself, no further processing. For more details see <code>vignette("additional_parameter")</code> .

### Value

A list with all recalled elements from the API. Based on the 'detailed' parameter it contains more or less information, but always includes the code of the object, the title, and the type of the object. This is done to facilitate further processing with the data. Attributes are added to the `data.frame` describing the search configuration for the returned output.

### Examples

```
## Not run:
# Find the variables of the statistic with the code "12411"
# with a detailed output
object <- gen_var2stat(code = "12411", detailed = TRUE)

## End(Not run)
```

---

`ggsub`

*ggsub*

---

### Description

`ggsub`

### Usage

```
ggsub(x)
```

### Arguments

`x` Element to subset with `$Content`

---

`insert_and_save_credentials`  
*insert\_and\_save\_credentials*

---

**Description**

`insert_and_save_credentials`

**Usage**

`insert_and_save_credentials(database, use_token)`

**Arguments**

<code>database</code>	The database to specify credentials for
<code>use_token</code>	Boolean. Do you want to (if possible) set an API token instead of password + username? Defaults to FALSE.

---

`is_cube_metadata_header`  
*is\_cube\_metadata\_header*

---

**Description**

`is_cube_metadata_header`

**Usage**

`is_cube_metadata_header(lines)`

**Arguments**

<code>lines</code>	Lines to check for header
--------------------	---------------------------

---

logincheck\_http\_error *logincheck\_http\_error*

---

**Description**

logincheck\_http\_error

**Usage**

logincheck\_http\_error(database, verbose, ...)

**Arguments**

database	The user input to 'gen_logincheck'
verbose	Boolean. Should the function message in case of success?
...	Additional parameters (unchecked)

**Value**

Informative error/warning messages + invisibly TRUE/FALSE

---

logincheck\_stop\_or\_warn  
*logincheck\_stop\_or\_warn*

---

**Description**

logincheck\_stop\_or\_warn

**Usage**

logincheck\_stop\_or\_warn(response, error, verbose, database)

**Arguments**

response	A HTTP response object
error	Boolean. Should the function warn or throw an error?
verbose	Boolean. Should the function message in case of success?
database	The database that the check should be run for

**Value**

In case of failure warns or errors. Invisibly returns TRUE (success) or FALSE (failure)

---

`param_check_regionalkey`  
*param\_check\_regionalkey*

---

**Description**

`param_check_regionalkey`

**Usage**

`param_check_regionalkey(regionalkey)`

**Arguments**

`regionalkey`      Regional key

---

`param_check_year`      *param\_check\_year*

---

**Description**

`param_check_year`

**Usage**

`param_check_year(year)`

**Arguments**

`year`              Year as parameter value

---

`param_collapse_vec`      *param\_collapse\_vec*

---

**Description**

`param_collapse_vec`

**Usage**

`param_collapse_vec(vec)`

**Arguments**

`vec`              Vector to be collapsed

---

read_cube	<i>read_cube</i>
-----------	------------------

---

**Description**

read\_cube

**Usage**

read\_cube(resp)

**Arguments**

resp	API response object resulting from a call to 'data/cubefile'
------	--

---

read_cube_block	<i>read_cube_block</i>
-----------------	------------------------

---

**Description**

read\_cube\_block

**Usage**

read\_cube\_block(lines)

**Arguments**

lines	Lines to read as header
-------	-------------------------

---

read_cube_data_lines	<i>read_cube_data_lines</i>
----------------------	-----------------------------

---

**Description**

read\_cube\_data\_lines

**Usage**

read\_cube\_data\_lines(lines, col\_names)

**Arguments**

lines	Lines to read data from
col_names	Specify column names

---

read\_cube\_metadata\_header  
*read\_cube\_metadata\_header*

---

**Description**

read\_cube\_metadata\_header

**Usage**

read\_cube\_metadata\_header(line, rename\_dups = TRUE)

**Arguments**

line	Line to read
rename_dups	Rename duplicates?

---

rename\_cube\_data\_columns  
*rename\_cube\_data\_columns*

---

**Description**

rename\_cube\_data\_columns

**Usage**

rename\_cube\_data\_columns(cube)

**Arguments**

cube	A cube object to rename the columns in
------	--

---

resp\_check\_data      *resp\_check\_data*

---

**Description**

resp\_check\_data

**Usage**

resp\_check\_data(resp)

**Arguments**

resp	Response object
------	-----------------

---

return\_table\_object    *return\_table\_object*

---

### Description

return\_table\_object

### Usage

```
return_table_object(response, response_type, language, all_character)
```

### Arguments

response	Response object
response_type	Response type
language	Language locale
all_character	Read all variables as character?

---

set\_credentials\_auth    *set\_credentials\_auth*

---

### Description

set\_credentials\_auth

### Usage

```
set_credentials_auth(path, sys_env, ui_menu_database, use_token)
```

### Arguments

path	Path for the .rds file
sys_env	System environment variable name for the key
ui_menu_database	The database for the auth request ('GENESIS' or 'Zensus 2022')
use_token	Boolean. Do you want to (if possible) set an API token instead of password + username? Defaults to FALSE.

---

spezifisch_create	<i>spezifisch_create</i>
-------------------	--------------------------

---

**Description**

spezifisch\_create

**Usage**

spezifisch\_create(x)

**Arguments**

x                   Element to extract \$Spezifisch from

---

split_cube	<i>split_cube</i>
------------	-------------------

---

**Description**

split\_cube

**Usage**

split\_cube(lines)

**Arguments**

lines               Lines to split a cube

---

test_database_function	<i>test_database_function</i>
------------------------	-------------------------------

---

**Description**

test\_database\_function

**Usage**

test\_database\_function(input, credential\_list, error.input, text)

**Arguments**

input	Input to test for database name
credential_list	A list containing the credentials for the databases to be accessed. If 'NULL' (default), the function will use the stored credentials from <code>gen_auth_get()</code> .
error.input	Indicator error.ignore
text	Indicator verbose

---

test_if_error	<i>test_if_error</i>
---------------	----------------------

---

**Description**

test\_if\_error

**Usage**

```
test_if_error(input, para, verbose = NULL)
```

**Arguments**

input	Response object
para	Parameter TRUE/FALSE
verbose	Verbose TRUE/FALSE

---

test_if_error_find	<i>test_if_error_find</i>
--------------------	---------------------------

---

**Description**

test\_if\_error\_find

**Usage**

```
test_if_error_find(input, para, verbose = NULL)
```

**Arguments**

input	Response object
para	Parameter TRUE/FALSE
verbose	Verbose TRUE/FALSE

---

test\_if\_error\_light    *test\_if\_error\_light*

---

**Description**

test\_if\_error\_light

**Usage**

test\_if\_error\_light(input, verbose = NULL)

**Arguments**

input	Response object
verbose	Verbose TRUE/FALSE

---

test\_if\_error\_variables  
*test\_if\_error\_variables*

---

**Description**

test\_if\_error\_variables

**Usage**

test\_if\_error\_variables(input, para)

**Arguments**

input	Response object
para	Parameter TRUE/FALSE

---

test\_if\_json            *test\_if\_json*

---

**Description**

test\_if\_json

**Usage**

test\_if\_json(input)

**Arguments**

input	Response object
-------	-----------------

---

test_if_okay	<i>test_if_okay</i>
--------------	---------------------

---

**Description**

test\_if\_okay

**Usage**

test\_if\_okay(input)

**Arguments**

input	Response object
-------	-----------------

---

test_if_process_further	<i>test_if_process_further</i>
-------------------------	--------------------------------

---

**Description**

test\_if\_process\_further

**Usage**

test\_if\_process\_further(input, para, verbose = NULL)

**Arguments**

input	Response object
para	Parameter TRUE/FALSE
verbose	Verbose TRUE/FALSE

---

<code>title_search</code>	<i>title_search</i>
---------------------------	---------------------

---

**Description**

`title_search`

**Usage**

`title_search(x, term, text)`

**Arguments**

<code>x</code>	Element to extract \$Content from
<code>term</code>	Search term
<code>text</code>	Indicator verbose

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