# Package ‘gh’

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gh

Query the GitHub API

Description

This is an extremely minimal client. You need to know the API to be able to use this client. All this function does is:

- Try to substitute each listed parameter into endpoint, using the \{parameter\} notation.
- If a GET request (the default), then add all other listed parameters as query parameters.
- If not a GET request, then send the other parameters in the request body, as JSON.
- Convert the response to an R list using \texttt{jsonlite::fromJSON()}. 

Usage

\begin{verbatim}
gh(
   endpoint,
   ..., 
   per_page = NULL, 
   .token = NULL,
   .destfile = NULL,
   .overwrite = FALSE,
   .api_url = NULL,
   .method = "GET",
   .limit = NULL,
   .accept = "application/vnd.github.v3+json",
   .send_headers = NULL,
   .progress = TRUE,
   .params = list(),
   .max_wait = 600,
   .max_rate = NULL
)
\end{verbatim}
Arguments

endpoint GitHub API endpoint. Must be one of the following forms:

- METHOD path, e.g. GET /rate_limit,
- path, e.g. /rate_limit,
- METHOD url, e.g. GET https://api.github.com/rate_limit,
- url, e.g. https://api.github.com/rate_limit.

If the method is not supplied, will use .method, which defaults to "GET".

... Name-value pairs giving API parameters. Will be matched into endpoint place-
holders, sent as query parameters in GET requests, and as a JSON body of POST
requests. If there is only one unnamed parameter, and it is a raw vector, then it
will not be JSON encoded, but sent as raw data, as is. This can be used for
example to add assets to releases. Named NULL values are silently dropped. For
GET requests, named NA values trigger an error. For other methods, named NA
values are included in the body of the request, as JSON null.

per_page Number of items to return per page. If omitted, will be substituted by max(.limit,
100) if .limit is set, otherwise determined by the API (never greater than 100).

.token Authentication token. Defaults to GITHUB_PAT or GITHUB_TOKEN environment
variables, in this order if any is set. See gh_token() if you need more flexibility,
e.g. different tokens for different GitHub Enterprise deployments.

.destfile Path to write response to disk. If NULL (default), response will be processed and
returned as an object. If path is given, response will be written to disk in the
form sent.

.overwrite If .destfile is provided, whether to overwrite an existing file. Defaults to FALSE.

.api_url Github API url (default: https://api.github.com). Used if endpoint just
contains a path. Defaults to GITHUB_API_URL environment variable if set.

.method HTTP method to use if not explicitly supplied in the endpoint.

.limit Number of records to return. This can be used instead of manual pagination.
By default it is NULL, which means that the defaults of the GitHub API are used.
You can set it to a number to request more (or less) records, and also to Inf to
request all records. Note, that if you request many records, then multiple GitHub
API calls are used to get them, and this can take a potentially long time.

.accept The value of the Accept HTTP header. Defaults to "application/vnd.github.v3+json"
. If Accept is given in .send_headers, then that will be used. This parameter
can be used to provide a custom media type, in order to access a preview feature
of the API.

.send_headers Named character vector of header field values (except Authorization, which
is handled via .token). This can be used to override or augment the default
User-Agent header: "https://github.com/r-lib/gh".

.progress Whether to show a progress indicator for calls that need more than one HTTP
request.

.params Additional list of parameters to append to ... It is easier to use this than ... if
you have your parameters in a list already.
.max_wait  Maximum number of seconds to wait if rate limited. Defaults to 10 minutes.
.max_rate  Maximum request rate in requests per second. Set this to automatically throttle requests.

Value
Answer from the API as a gh_response object, which is also a list. Failed requests will generate an R error. Requests that generate a raw response will return a raw vector.

See Also
  gh_gql() if you want to use the GitHub GraphQL API, gh_whoami() for details on GitHub API token management.

Examples

## Repositories of a user, these are equivalent
gh("/users/hadley/repos", .limit = 2)
gh("/users/{username}/repos", username = "hadley", .limit = 2)

## Starred repositories of a user
gh("/users/hadley/starred", .limit = 2)
gh("/users/{username}/starred", username = "hadley", .limit = 2)

## Create a repository, needs a token in GITHUB_PAT (or GITHUB_TOKEN)
## environment variable
gh("POST /user/repos", name = "foobar")

## Issues of a repository
gh("/repos/hadley/dplyr/issues")
gh("/repos/{owner}/{repo}/issues", owner = "hadley", repo = "dplyr")

## Automatic pagination
users <- gh("/users", .limit = 50)
length(users)

## Access developer preview of Licenses API (in preview as of 2015-09-24)
gh("/licenses")  # used to error code 415
gh("/licenses", .accept = "application/vnd.github.drax-preview+json")

## Access Github Enterprise API
## Use GITHUB_API_URL environment variable to change the default.
gh("/user/repos", type = "public", .api_url = "https://github.foobar.edu/api/v3")

## Use I() to force body part to be sent as an array, even if length 1
## This works whether assignees has length 1 or > 1
assignees <- "gh_user"
assignees <- c("gh_user1", "gh_user2")
gh("PATCH /repos/OWNER/REPO/issues/1", assignees = I(assignees))

## There are two ways to send JSON data. One is that you supply one or
## more objects that will be converted to JSON automatically via
## jsonlite::toJSON(). In this case sometimes you need to use
## jsonlite::unbox() because fromJSON() creates lists from scalar vectors
## by default. The Content-Type header is automatically added in this
## case. For example this request turns on GitHub Pages, using this
## API: https://docs.github.com/v3/repos/pages/#enable-a-pages-site

gh::gh(
  "POST /repos/{owner}/{repo}/pages",
  owner = "r-lib",
  repo = "gh",
  source = list(
    branch = jsonlite::unbox("gh-pages"),
    path = jsonlite::unbox("/")
  ),
  .send_headers = c(Accept = "application/vnd.github.switcheroo-preview+json")
)

## The second way is to handle the JSON encoding manually, and supply it
## as a raw vector in an unnamed argument, and also a Content-Type header:

body <- '{ "source": { "branch": "gh-pages", "path": "/" } }'
gh::gh(
  "POST /repos/{owner}/{repo}/pages",
  owner = "r-lib",
  repo = "gh",
  charToRaw(body),
  .send_headers = c(
    Accept = "application/vnd.github.switcheroo-preview+json",
    "Content-Type" = "application/json"
  )
)

---

gh_gql

A simple interface for the GitHub GraphQL API v4.

Description

See more about the GraphQL API here: [https://docs.github.com/graphql](https://docs.github.com/graphql)

Usage

gh_gql(query, ...)
Arguments

query

- The GraphQL query, as a string.

... Name-value pairs giving API parameters. Will be matched into endpoint placeholders, sent as query parameters in GET requests, and as a JSON body of POST requests. If there is only one unnamed parameter, and it is a raw vector, then it will not be JSON encoded, but sent as raw data, as is. This can be used for example to add assets to releases. Named NULL values are silently dropped. For GET requests, named NA values trigger an error. For other methods, named NA values are included in the body of the request, as JSON null.

Details

Note: pagination and the .limit argument does not work currently, as pagination in the GraphQL API is different from the v3 API. If you need pagination with GraphQL, you’ll need to do that manually.

See Also

gh() for the GitHub v3 API.

Examples

gh_gql("query { viewer { login }}")

# Get rate limit
ratelimit_query <- "query {
    viewer {
        login
    }
    rateLimit {
        limit
        cost
        remaining
        resetAt
    }
}
"

gh_gql(ratelimit_query)

---

**gh_next**

Get the next, previous, first or last page of results

Description

Get the next, previous, first or last page of results
gh_rate_limit

Usage

gh_next(gh_response)
gh_prev(gh_response)
gh_first(gh_response)
gh_last(gh_response)

Arguments

gh_response An object returned by a gh() call.

Details

Note that these are not always defined. E.g. if the first page was queried (the default), then there are no first and previous pages defined. If there is no next page, then there is no next page defined, etc.

If the requested page does not exist, an error is thrown.

Value

Answer from the API.

See Also

The .limit argument to gh() supports fetching more than one page.

Examples

x <- gh("/users")
vapply(x, "[[", character(1), "login")
x2 <- gh_next(x)
vapply(x2, "[[", character(1), "login")

gh_rate_limit  Return GitHub user’s current rate limits

Description

gh_rate_limits() reports on all rate limits for the authenticated user. gh_rate_limit() reports on rate limits for previous successful request.

Further details on GitHub’s API rate limit policies are available at https://docs.github.com/v3/#rate-limiting.
Usage

```r
gh_rate_limit(
  response = NULL,
  .token = NULL,
  .api_url = NULL,
  .send_headers = NULL
)
```

```r
github_rate_limits(.token = NULL, .api_url = NULL, .send_headers = NULL)
```

Arguments

- `response` gh_response object from a previous gh call, rate limit values are determined from values in the response header. Optional argument, if missing a call to "GET /rate_limit" will be made.
- `.token` Authentication token. Defaults to GITHUB_PAT or GITHUB_TOKEN environment variables, in this order if any is set. See `gh_token()` if you need more flexibility, e.g. different tokens for different GitHub Enterprise deployments.
- `.send_headers` Named character vector of header field values (except Authorization, which is handled via .token). This can be used to override or augment the default User-Agent header: "https://github.com/r-lib/gh".

Value

A list object containing the overall limit, remaining limit, and the limit reset time.

---

**gh_token**  

*Return the local user’s GitHub Personal Access Token (PAT)*

Description

If gh can find a personal access token (PAT) via `gh_token()`, it includes the PAT in its requests. Some requests succeed without a PAT, but many require a PAT to prove the request is authorized by a specific GitHub user. A PAT also helps with rate limiting. If your gh use is more than casual, you want a PAT.

gh calls `gitcreds::gitcreds_get()` with the api_url, which checks session environment variables and then the local Git credential store for a PAT appropriate to the api_url. Therefore, if you have previously used a PAT with, e.g., command line Git, gh may retrieve and re-use it. You can call `gitcreds::gitcreds_get()` directly, yourself, if you want to see what is found for a specific URL. If no matching PAT is found, `gitcreds::gitcreds_get()` errors, whereas `gh_token()` does not and, instead, returns "".

See GitHub’s documentation on [Creating a personal access token](https://docs.github.com/en/github/authenticating-to-github/creating-a-personal-access-token), or use `usethis::create_github_token()` for a guided experience, including pre-selection of recommended scopes. Once you have a PAT, you can use `gitcreds::gitcreds_set()` to add it to the Git credential store. From that point on, gh (via `gitcreds::gitcreds_get()`) should be able to find it without further effort on your part.
**gh_tree_remote**

**Usage**

gh_token(api_url = NULL)

**Arguments**

- **api_url**
  - GitHub API URL. Defaults to the GITHUB_API_URL environment variable, if set, and otherwise to https://api.github.com.

**Value**

A string of characters, if a PAT is found, or the empty string, otherwise. For convenience, the return value has an S3 class in order to ensure that simple printing strategies don’t reveal the entire PAT.

**Examples**

```r
## Not run:
gh_token()
format(gh_token())
str(gh_token())
## End(Not run)
```

---

**gh_tree_remote**  
Find the GitHub remote associated with a path

**Description**

This is handy helper if you want to make gh requests related to the current project.

**Usage**

gh_tree_remote(path = ".")

**Arguments**

- **path**
  - Path that is contained within a git repo.

**Value**

If the repo has a github remote, a list containing username and repo. Otherwise, an error.

**Examples**

gh_tree_remote()
**gh_whoami**

Info on current GitHub user and token

**Description**

Reports wallet name, GitHub login, and GitHub URL for the current authenticated user, the first bit of the token, and the associated scopes.

**Usage**

```r
gh_whoami(.token = NULL, .api_url = NULL, .send_headers = NULL)
```

**Arguments**

- **.token**: Authentication token. Defaults to `GITHUB_PAT` or `GITHUB_TOKEN` environment variables, in this order if any is set. See `gh_token()` if you need more flexibility, e.g. different tokens for different GitHub Enterprise deployments.
- **.send_headers**: Named character vector of header field values (except `Authorization`, which is handled via `.token`). This can be used to override or augment the default `User-Agent` header: "https://github.com/r-lib/gh".

**Details**

Get a personal access token for the GitHub API from [https://github.com/settings/tokens](https://github.com/settings/tokens) and select the scopes necessary for your planned tasks. The `repo` scope, for example, is one many are likely to need.

On macOS and Windows it is best to store the token in the git credential store, where most GitHub clients, including `gh`, can access it. You can use the `gitcreds` package to add your token to the credential store:

```r
gitcreds::gitcreds_set()
```

See [https://gh.r-lib.org/articles/managing-personal-access-tokens.html](https://gh.r-lib.org/articles/managing-personal-access-tokens.html) and [https://usethis.r-lib.org/articles/articles/git-credentials.html](https://usethis.r-lib.org/articles/articles/git-credentials.html) for more about managing GitHub (and generic git) credentials.

On other systems, including Linux, the git credential store is typically not as convenient, and you might want to store your token in the `GITHUB_PAT` environment variable, which you can set in your `.Renviron` file.

**Value**

A `gh_response` object, which is also a list.
Examples

gh_whoami()

## explicit token + use with GitHub Enterprise
gh_whoami(
  .token = "8c70fd8419398999c9ac5bacf319282193cadf2",
  .api_url = "https://github.foobar.edu/api/v3"
)

Description

Print the result of a GitHub API call

Usage

## S3 method for class 'gh_response'
print(x, ...)

Arguments

x The result object.
...

Ignored.

Value

The JSON result.
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