Package ‘crul’

November 6, 2019

Title HTTP Client

Description A simple HTTP client, with tools for making HTTP requests, and mocking HTTP requests. The package is built on R6, and takes inspiration from Ruby's 'faraday' gem (<https://rubygems.org/gems/faraday>). The package name is a play on curl, the widely used command line tool for HTTP, and this package is built on top of the R package 'curl', an interface to 'libcurl' (<https://curl.haxx.se/libcurl>).

Version 0.9.0

License MIT + file LICENSE

URL https://docs.ropensci.org/crul (website)
    https://github.com/ropensci/crul (devel)

BugReports https://github.com/ropensci/crul/issues

Encoding UTF-8

Language en-US

Imports curl (>= 3.3), R6 (>= 2.2.0), urltools (>= 1.6.0), httpcode (>= 0.2.0), jsonlite, mime

Suggests testthat, fauxpas (>= 0.1.0), webmockr (>= 0.1.0), knitr

VignetteBuilder knitr

RoxygenNote 6.1.1

X-schema.org-applicationCategory Web

X-schema.org-keywords http, https, API, web-services, curl, download, libcurl, async, mocking, caching

X-schema.org-isPartOf https://ropensci.org

NeedsCompilation no

Author Scott Chamberlain [aut, cre] (<https://orcid.org/0000-0003-1444-9135>)

Maintainer Scott Chamberlain <myrmecocystus@gmail.com>

Repository CRAN

Date/Publication 2019-11-06 21:50:02 UTC
R topics documented:

crul-package ........................................... 2
Async .................................................... 4
AsyncVaried ............................................ 7
auth ...................................................... 10
content-types ......................................... 11
cookies .................................................. 13
crul-options ........................................... 14
curl-options ........................................... 15
delete-requests ....................................... 16
handle ................................................... 17
hooks .................................................... 17
http-headers ........................................... 18
HttpClient ............................................. 19
HttpRequest ............................................ 23
HttpResponse .......................................... 25
mock ..................................................... 27
ok ......................................................... 28
Paginator ............................................... 29
post-requests ......................................... 31
progress ............................................... 33
proxies ............................................... 33
upload .................................................. 35
url_build ............................................... 35
verb-DELETE ........................................... 36
verb-GET ............................................... 37
verb-HEAD ............................................ 38
verb-PATCH ............................................ 39
verb-POST ............................................. 39
verb-PUT ............................................... 40
writing-options ....................................... 41

Index 43

<table>
<thead>
<tr>
<th>crul-package</th>
<th>HTTP R client</th>
</tr>
</thead>
</table>

Description

HTTP R client
Package API

- **HttpClient()** - create a connection client, set all your http options, make http requests
- **HttpResponse()** - mostly for internal use, handles http responses
- **Paginator()** - auto-paginate through requests
- **Async()** - asynchronous requests
- **AsyncVaried()** - varied asynchronous requests
- **HttpRequest()** - generate an HTTP request, mostly for use in building requests to be used in `Async` or `AsyncVaried`
- **mock()** - Turn on/off mocking, via `webmockr`
- **auth()** - Simple authentication helper
- **proxy()** - Proxy helper
- **upload()** - File upload helper
- set curl options globally: `set_auth()`, `set_headers()`, `set_opts()`, `set_proxy()`, and `crul_settings()`

HTTP verbs (or HTTP request methods)

See `verb-GET`, `verb-POST`, `verb-PUT`, `verb-PATCH`, `verb-DELETE`, `verb-HEAD` for details.

- **HttpClient** is the main interface for making HTTP requests, and includes methods for each HTTP verb
- **HttpRequest** allows you to prepare a HTTP payload for use with `AsyncVaried`, which provides asynchronous requests for varied HTTP methods
- **Async** provides asynchronous requests for a single HTTP method at a time
- the `verb()` method can be used on all the above to request a specific HTTP verb

Checking HTTP responses

**HttpResponse()** has helpers for checking and raising warnings/errors.

- **content-types** details the various options for checking content types and throwing a warning or error if the response content type doesn’t match what you expect. Mis-matched content-types are typically a good sign of a bad response. There’s methods built in for json, xml and html, with the ability to set any custom content type
- **raise_for_status()** is a method on **HttpResponse()** that checks the HTTP status code, and errors with the appropriate message for the HTTP status code, optionally using the package `fauxpas` if it’s installed.

HTTP conditions

We use `fauxpas` if you have it installed for handling HTTP conditions but if it’s not installed we use `httpcode`
Async

Mocking

Mocking HTTP requests is supported via the `webmockr` package. See `mock` for guidance, and https://ropenscilabs.github.io/http-testing-book/

Caching

Caching HTTP requests is supported via the `vcr` package. See https://ropenscilabs.github.io/http-testing-book/

Links

Source code: https://github.com/ropensci/crul
Bug reports/feature requests: https://github.com/ropensci/crul/issues

Author(s)

Scott Chamberlain <myrmecocystus@gmail.com>

---

Async Simple async client

---

Description

A client to work with many URLs, but all with the same HTTP method

Arguments

urls (character) one or more URLs (required)

Details

Methods

get(path, query, disk, stream, ...) make async GET requests for all URLs
post(path, query, body, encode, disk, stream, ...) make async POST requests for all URLs
put(path, query, body, encode, disk, stream, ...) make async PUT requests for all URLs
patch(path, query, body, encode, disk, stream, ...) make async PATCH requests for all URLs
delete(path, query, body, encode, disk, stream, ...) make async DELETE requests for all URLs
head(path, ...) make async HEAD requests for all URLs
verb(verb, ...) make async requests with an arbitrary HTTP verb

See `HttpClient()` for information on parameters.
Value

a list, with objects of class `HttpResponse()`. Responses are returned in the order they are passed in. We print the first 10.

Failure behavior

HTTP requests mostly fail in ways that you are probably familiar with, including when there’s a 400 response (the URL not found), and when the server made a mistake (a 500 series HTTP status code).

But requests can fail sometimes where there is no HTTP status code, and no agreed upon way to handle it other than to just fail immediately.

When a request fails when using synchronous requests (see `HttpClient`) you get an error message that stops your code progression immediately saying for example:

- “Could not resolve host: https://foo.com”
- “Failed to connect to foo.com”
- “Resolving timed out after 10 milliseconds”

However, for async requests we don’t want to fail immediately because that would stop the subsequent requests from occurring. Thus, when we find that a request fails for one of the reasons above we give back a `HttpResponse` object just like any other response, and:

- capture the error message and put it in the content slot of the response object (thus calls to `content` and `parse()` work correctly)
- give back a 0 HTTP status code. we handle this specially when testing whether the request was successful or not with e.g., the `success()` method

See Also

Other async: `AsyncVaried`

Examples

```r
## Not run:
cc <- Async$new(
  urls = c(
    'https://httpbin.org/',
    'https://httpbin.org/get?a=5',
    'https://httpbin.org/get?foo=bar'
  )
)
cc
(res <- cc$get())
res[[1]]$url
res[[1]]$success()
res[[1]]$status_http()
res[[1]]$response_headers
res[[1]]$method
```
res[[1]]$content
res[[1]]$parse("UTF-8")
lapply(res, function(z) z$parse("UTF-8"))

# curl options/headers with async
urls = c(
  'https://httpbin.org/',
  'https://httpbin.org/get?a=5',
  'https://httpbin.org/get?foo=bar'
)
cc <- Async$new(urls = urls,
  opts = list(verbose = TRUE),
  headers = list(foo = "bar")
)
cc
(res <- cc$get())

# using auth with async
dd <- Async$new(
  urls = rep('https://httpbin.org/basic-auth/user/passwd', 3),
  auth = auth(user = "foo", pwd = "passwd"),
  opts = list(verbose = TRUE)
)

dd
res <- dd$get()
res
vapply(res, function(z) z$status_code, double(1))
vapply(res, function(z) z$success(), logical(1))
lapply(res, function(z) z$parse("UTF-8"))

# failure behavior
## e.g. when a URL doesn't exist, a timeout, etc.
  "https://httpbin.org/get")
conn <- Async$new(urls = urls)
res <- conn$get()
res
res[[1]]$parse("UTF-8") # a failure
res[[2]]$parse("UTF-8") # a failure
res[[3]]$parse("UTF-8") # a success

# use arbitrary http verb
cc <- Async$new(
  urls = c(
    'https://httpbin.org/',
    'https://httpbin.org/get?a=5',
    'https://httpbin.org/get?foo=bar'
  )
)

method <- 'get'
(res <- cc$verb(method))
lapply(res, function(z) z$parse("UTF-8"))

## End(Not run)
AsyncVaried \hspace{1cm} Async client for different request types

**Description**

Async client for different request types

**Arguments**

..., .list Any number of objects of class HttpRequest(), must supply inputs to one of these parameters, but not both

**Details**

**Methods**

- `request()` Execute asynchronous requests - returns: nothing, responses stored inside object, though will print messages if you choose verbose output
- `requests()` list requests - returns: a list of HttpRequest objects, empty list before requests made
- `responses()` list responses - returns: a list of HttpResponse objects, empty list before requests made
- `parse(encoding = "UTF-8")` parse content - returns: character vector, empty character vector before requests made
- `status_code()` (integer) HTTP status codes - returns: numeric vector, empty numeric vector before requests made
- `status()` (list) HTTP status objects - returns: a list of http_code objects, empty list before requests made
- `content()` raw content - returns: raw list, empty list before requests made
- `times()` curl request times - returns: list of named numeric vectors, empty list before requests made

**Value**

An object of class AsyncVaried with variables and methods. HttpRequest objects are returned in the order they are passed in. We print the first 10.

**Failure behavior**

HTTP requests mostly fail in ways that you are probably familiar with, including when there’s a 400 response (the URL not found), and when the server made a mistake (a 500 series HTTP status code).

But requests can fail sometimes where there is no HTTP status code, and no agreed upon way to handle it other than to just fail immediately.

When a request fails when using synchronous requests (see HttpClient) you get an error message that stops your code progression immediately saying for example:
• "Could not resolve host: https://foo.com"
• "Failed to connect to foo.com"
• "Resolving timed out after 10 milliseconds"

However, for async requests we don’t want to fail immediately because that would stop the subsequent requests from occurring. Thus, when we find that a request fails for one of the reasons above we give back a `HttpResponse` object just like any other response, and:

• capture the error message and put it in the content slot of the response object (thus calls to `content` and `parse()` work correctly)
• give back a 0 HTTP status code. We handle this specially when testing whether the request was successful or not with e.g., the `success()` method

See Also

Other async: Async

Examples

```r
## Not run:
# pass in requests via ...
req1 <- HttpRequest$new(
  url = "https://httpbin.org/get",
  opts = list(quiet = TRUE),
  headers = list(foo = "bar")
)$get()
req2 <- HttpRequest$new(url = "https://httpbin.org/post")$post()

# Create an AsyncVaried object
out <- AsyncVaried$new(req1, req2)

# before you make requests, the methods return empty objects
out$status()
out$status_code()
out$content()
out$times()
out$parse()
out$responses()

# make requests
out$request()

# access various parts
## http status objects
out$status()
## status codes
out$status_code()
## content (raw data)
out$content()
## times
out$times()
```
## parsed content
out$parse()

## response objects
out$responses()

# use $verb() method to select http verb
method <- "post"
req1 <- HttpRequest$new(
  url = "https://httpbin.org/post",
  opts = list(verbise = TRUE),
  headers = list(foo = "bar")
)$verb(method)
req2 <- HttpRequest$new(url = "https://httpbin.org/post")$verb(method)
out <- AsyncVaried$new(req1, req2)

# pass in requests in a list via .list param
reqlist <- list(
  HttpRequest$new(url = "https://httpbin.org/get")$get(),
  HttpRequest$new(url = "https://httpbin.org/post")$post(),
  HttpRequest$new(url = "https://httpbin.org/put")$put(),
  HttpRequest$new(url = "https://httpbin.org/delete")$delete(),
  HttpRequest$new(url = "https://httpbin.org/get?g=5")$get(),
  HttpRequest$new(
    url = "https://httpbin.org/post")$post(body = list(y = 9)),
  HttpRequest$new(
    url = "https://httpbin.org/get")$get(query = list(hello = "world"))
)
out <- AsyncVaried$new(.list = reqlist)

# using auth with async
url <- "https://httpbin.org/basic-auth/user/passwd"
auth <- auth(user = "user", pwd = "passwd")
reqlist <- list(
  HttpRequest$new(url = url, auth = auth)$get(),
  HttpRequest$new(url = url, auth = auth)$get(query = list(a=5)),
  HttpRequest$new(url = url, auth = auth)$get(query = list(b=3))
)
out <- AsyncVaried$new(.list = reqlist)

# failure behavior
## e.g. when a URL doesn’t exist, a timeout, etc.

```r
reqlist <- list(
  HttpRequest$new(url = "http://stuffthings.gvb")$get(),
  HttpRequest$new(url = "https://httpbin.org")$head(),
  HttpRequest$new(url = "https://httpbin.org",
    opts = list(timeout_ms = 10))$head()
)
(tmp <- AsyncVaried$new(.list = reqlist))
tmp$request()
tmp$parse("UTF-8")
```

# access intermediate redirect headers

dois <- c("10.7202/1045307ar", "10.1242/jeb.088898", "10.1121/1.3383963")

```r
reqlist <- list(
  HttpRequest$new(url = paste0("https://doi.org/", dois[1]))$get(),
  HttpRequest$new(url = paste0("https://doi.org/", dois[2]))$get(),
  HttpRequest$new(url = paste0("https://doi.org/", dois[3]))$get()
)
(tmp <- AsyncVaried$new(.list = reqlist))
tmp$request()
tmp
lapply(tmp$responses(), "[[", "response_headers_all")
```

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

### auth

**Authentication**

#### Description

Authentication

#### Usage

```r
auth(user, pwd, auth = "basic")
```

#### Arguments

- **user**  
  (character) username, required. see Details.
- **pwd**  
  (character) password, required. see Details.
- **auth**  
  (character) authentication type, one of basic (default), digest, digest_ie, gssnegotiate, ntlm, or any. required

#### Details

Only supporting simple auth for now, OAuth later maybe.

For `user` and `pwd` you are required to pass in some value. The value can be `NULL` to - which is equivalent to passing in an empty string like "" in `httr::authenticate`. You may want to pass in
NULL for both user and pwd for example if you are using gssnegotiate auth type. See example below.

Examples

```r
auth(user = "foo", pwd = "bar", auth = "basic")
auth(user = "foo", pwd = "bar", auth = "digest")
auth(user = "foo", pwd = "bar", auth = "ntlm")
auth(user = "foo", pwd = "bar", auth = "any")
```

# gssnegotiate auth
auth(NULL, NULL, "gssnegotiate")

## Not run:
# with HttpClient
(res <- HttpClient$new(
  url = "https://httpbin.org/basic-auth/user/passwd",
  auth = auth(user = "user", pwd = "passwd")
))
res$auth
x <- res$get()
jsonlite::fromJSON(x$parse("UTF-8"))

# with HttpRequest
(res <- HttpRequest$new(
  url = "https://httpbin.org/basic-auth/user/passwd",
  auth = auth(user = "user", pwd = "passwd")
))
res$auth
```

## End(Not run)

---

**content-types**

**Working with content types**

**Description**

The `HttpResponse` class holds all the responses elements for an HTTP request. This document details how to work specifically with the content-type of the response headers.

**Content types**

The "Content-Type" header in HTTP responses gives the media type of the response. The media type is both the data format and how the data is intended to be processed by a recipient. (modified from rfc7231)
Behavior of the parameters `Http::Response` `raise_for_ct*` methods

- **type**: (only applicable for the `raise_for_ct()` method): instead of using one of the three other content type methods for html, json, or xml, you can specify a mime type to check, any of those in `mime::mimemap`
- **charset**: if you don’t give a value to this parameter, we only check that the content type is what you expect; that is, the charset, if given, is ignored.
- **behavior**: by default when you call this method, and the content type does not match what the method expects, then we run `stop()` with a message. Instead of stopping, you can choose `behavior="warning"` and we’ll throw a warning instead, allowing any downstream processing to proceed.

References

spec for content types: [https://tools.ietf.org/html/rfc7231#section-3.1.1.5](https://tools.ietf.org/html/rfc7231#section-3.1.1.5)
spec for media types: [https://tools.ietf.org/html/rfc7231#section-3.1.1.1](https://tools.ietf.org/html/rfc7231#section-3.1.1.1)

See Also

`Http::Response`

Examples

```r
## Not run:
(x <- HttpClient$new(url = "https://httpbin.org"))
(res <- x$get())

## get the content type
res$response_headers$"content-type"

## check that the content type is text/html
res$raise_for_ct_html()

## it's def. not json
# res$raise_for_ct_json()

## give custom content type
res$raise_for_ct("text/html")
# res$raise_for_ct("application/json")
# res$raise_for_ct("foo/bar")

## check charset in addition to the media type
res$raise_for_ct_html(charset = "utf-8")
# res$raise_for_ct_html(charset = "utf-16")

# warn instead of stop
res$raise_for_ct_json(behavior = "warning")

## End(Not run)
```
cookies

Working with cookies

Description
Working with cookies

Examples

```r
## Not run:
x <- HttpClient$new(
  url = "https://httpbin.org",
  opts = list(
    cookie = "c=1;f=5",
    verbose = TRUE
  )
)
x

# set cookies
(res <- x$get("cookies"))
jsonlite::fromJSON(res$parse("UTF-8"))

(x <- HttpClient$new(url = "https://httpbin.org"))
res <- x$get("cookies/set", query = list(foo = 123, bar = "ftw"))
jsonlite::fromJSON(res$parse("UTF-8"))
curl::handle_cookies(handle = res$handle)

# reuse handle
res2 <- x$get("get", query = list(hello = "world"))
jsonlite::fromJSON(res2$parse("UTF-8"))
curl::handle_cookies(handle = res2$handle)

# DOAJ
x <- HttpClient$new(url = "https://doaj.org")
res <- x$get("api/v1/journals/f3f2e7f23d444370ae5f5199f85bc100", verbose = TRUE)
res$response_headers$"set-cookie"
curl::handle_cookies(handle = res$handle)
res2 <- x$get("api/v1/journals/9abfb36b06404e8a8566e1a44180bbdc", verbose = TRUE)

## reset handle
x$handle_pop()
# cookies no longer sent, as handle reset
res2 <- x$get("api/v1/journals/9abfb36b06404e8a8566e1a44180bbdc", verbose = TRUE)

## End(Not run)
```
**crul-options**

*Set curl options, proxy, and basic auth*

**Description**

Set curl options, proxy, and basic auth

**Usage**

```r
set_opts(...)  
set_proxy(x)  
set_auth(x)  
set_headers(...)  

crul_settings(reset = FALSE)
```

**Arguments**

- `...` For `set_opts()` any curl option in the set `curl::curl_options()`. For `set_headers()` a named list of headers
- `x` For `set_proxy()` a proxy object made with `proxy()`. For `set_auth()` an auth object made with `auth()`
- `reset` (logical) reset all settings (aka, delete them). Default: `FALSE`

**Details**

the mock option will be seen in output of `crul_settings()` but is set via the function `mock()`

**Examples**

```r
# get settings  
crul_settings()

# curl options  
set_opts(timeout_ms = 1000)  
crul_settings()  
set_opts(timeout_ms = 4000)  
crul_settings()  
set_opts(verb = TRUE)  
crul_settings()  
## Not run:  
HttpClient$new('https://httpbin.org')$get('get')

## End(Not run)
```
```
# basic authentication
set_auth(auth(user = "foo", pwd = "bar", auth = "basic"))
crul_settings()

# proxies
set_proxy(proxy("http://97.77.104.22:3128"))
crul_settings()

# headers
crul_settings(TRUE) # reset first
set_headers(foo = "bar")
crul_settings()
set_headers('User-Agent' = "hello world")
crul_settings()
## Not run:
set_opts(verbose = TRUE)
HttpClient$new('https://httpbin.org')$get('get')
## End(Not run)

# reset
crul_settings(TRUE)
crul_settings()

# works with async functions
## Async
set_opts(verbose = TRUE)
c <- Async$new(urls = c('
  'https://httpbin.org/get?a=5',
  'https://httpbin.org/get?foo=bar'))
(res <- c$get())

## AsyncVaried
set_opts(verbose = TRUE)
set_headers(stuff = "things")
reqlist <- list(
  HttpRequest$new(url = "https://httpbin.org/get")$get(),
  HttpRequest$new(url = "https://httpbin.org/post")$post())
out <- AsyncVaried$new(.list = reqlist)
out$request()
```

---

curl-options  
curl options

description

With the `opts` parameter you can pass in various curl options, including user agent string, whether to get verbose curl output or not, setting a timeout for requests, and more. See `curl::curl_options()` for all the options you can use. Note that you need to give curl options exactly as given in `curl::curl_options()`.
Examples

```r
## Not run:
url <- "https://httpbin.org"

# set curl options on client initialization
(res <- HttpClient$new(url = url, opts = list(verb = TRUE)))
res$opts
del

# or set curl options when performing HTTP operation
(res <- HttpClient$new(url = url))
res$get('get', verbose = TRUE)
res$get('get', stuff = "things")

# set a timeout
(res <- HttpClient$new(url = url, opts = list(timeout_ms = 1)))
res$get('get')

# set user agent either as a header or an option
HttpClient$new(url = url, headers = list(\("User-Agent\) = "hello world"),
                opts = list(verb = TRUE))
res$get('get')

HttpClient$new(url = url, opts = list(verb = TRUE, useragent = "hello world"))
res$get('get')

## End(Not run)
```

---

**delete-requests**

**HTTP DELETE requests**

### Description

HTTP DELETE requests

### Examples

```r
## Not run:
(x <- HttpClient$new(url = "https://httpbin.org"))

# a list
(res1 <- x$delete('delete', body = list(hello = "world"), verbose = TRUE))
jsonlite::fromJSON(res1$parse("UTF-8"))

# a string
(res2 <- x$delete('delete', body = "hello world", verbose = TRUE))
jsonlite::fromJSON(res2$parse("UTF-8"))
```
## empty body request
`x$delete('delete', verbose = TRUE)`

## End(Not run)

---

### handle

**Description**

Make a handle

**Usage**

```r
handle(url, ...)
```

**Arguments**

- `url` (character) A url. required.
- `...` options passed on to `curl::new_handle()`

**Examples**

```r
handle("https://httpbin.org")
```

# handles - pass in your own handle

```
## Not run:
h <- handle("https://httpbin.org")
(res <- HttpClient$new(handle = h))
out <- res$get("get")
```

## End(Not run)

---

### hooks

**Description**

Trigger functions to run on requests and/or responses. See Details for more.

**Details**

Functions passed to `request` are run **before** the request occurs. The meaning of triggering a function on the request is that you can do things to the request object.

Functions passed to `response` are run **once** the request is done, and the response object is created. The meaning of triggering a function on the response is to do things on the response object.

The above for request and response applies the same whether you make real HTTP requests or mock with webmockr.
http-headers

Note

Only supported on HttpClient for now

Examples

```r
## Not run:
# hooks on the request
fun_req <- function(request) {
    cat(paste0("Requesting: ", request$url$url), sep = "\n")

(x <- HttpClient$new(url = "https://httpbin.org",
    hooks = list(request = fun_req)))
x$hooks
x$hooks$unit
r1 <- x$get('get')

captured_req <- list()
fun_req2 <- function(request) {
    cat("Capturing Request", sep = "\n")
captured_req <<- request
}

(x <- HttpClient$new(url = "https://httpbin.org",
    hooks = list(request = fun_req2)))
x$hooks
x$hooks$unit
r1 <- x$get('get')
captured_req

# hooks on the response
fun_resp <- function(response) {
    cat(paste0("status_code: ", response$status_code), sep = "\n")
}

(x <- HttpClient$new(url = "https://httpbin.org",
    hooks = list(response = fun_resp)))
x$url
x$hooks
r1 <- x$get('get')

# both
(x <- HttpClient$new(url = "https://httpbin.org",
    hooks = list(request = fun_req, response = fun_resp)))
x$get("get")

## End(Not run)
```

http-headers Working with HTTP headers
**Description**

Working with HTTP headers

**Examples**

```r
## Not run:
(x <- HttpClient$new(url = "https://httpbin.org"))

# set headers
(res <- HttpClient$new(
  url = "https://httpbin.org",
  opts = list(
    verbose = TRUE
  ),
  headers = list(
    a = "stuff",
    b = "things"
  )
))
res$headers
# reassign header value
res$headers$a <- "that"
# define new header
res$headers$c <- "what"
# request
res$get('get')

## setting content-type via headers
(res <- HttpClient$new(
  url = "https://httpbin.org",
  opts = list(
    verbose = TRUE
  ),
  headers = list('Content-Type' = "application/json")
))
res$get('get')

## End(Not run)
```

---

**HttpClient**  
**HTTP client**

**Description**

HTTP client

**Arguments**

- **url**  
  (character) A url. One of url or handle required.
opts (list) curl options, a named list. See `curl_options` for available curl options
proxies an object of class proxy, as returned from the `proxy` function. Supports one proxy for now
auth result of a call to the `auth` function, e.g. `auth(user = "foo", pwd = "bar")`
headers (list) a named list of headers
handle A handle, see `handle`
progress a function with logic for printing a progress bar for an HTTP request, ultimately passed down to `curl`. only supports `httr::progress()` for now
hooks (list) a named list (accepts: request, response) of functions (callbacks) to run on request and response objects. See `hooks` for more details.

Details

Methods

get(path, query, disk, stream, ...) Make a GET request
post(path, query, body, disk, stream, ...) Make a POST request
put(path, query, body, disk, stream, ...) Make a PUT request
patch(path, query, body, disk, stream, ...) Make a PATCH request
delete(path, query, body, disk, stream, ...) Make a DELETE request
head(path, query, ...) Make a HEAD request
verb(verb, ...) Use an arbitrary HTTP verb supported on this class Supported verbs: get, post, put, patch, delete, head. Also supports retry
retry(verb, ..., pause_base = 1, pause_cap = 60, pause_min = 1, times = 3, terminate_on, retry_only_on, onwait) Retries the request given by `verb` until successful (HTTP response status < 400), or a condition for giving up is met. Automatically recognizes Retry-After and X-RateLimit-Reset headers in the response for rate-limited remote APIs.
handle_pop() reset your curl handle
url_fetch(path, query) get the URL that would be sent (i.e., before executing the request). the only things that change the URL are path and query parameters; body and any curl options don’t change the URL - returns: URL as a character vector

Possible parameters (not all are allowed in each HTTP verb):

- **path** - URL path, appended to the base URL
- **query** - query terms, as a named list
- **body** - body as an R list
- **encode** - one of form, multipart, json, or raw
- **disk** - a path to write to. if NULL (default), memory used. See `curl::curl_fetch_disk()` for help.
- **stream** - an R function to determine how to stream data. if NULL (default), memory used. See `curl::curl_fetch_stream()` for help
- **verb** - an HTTP verb supported on this class: get, post, put, patch, delete, head. Also supports retry.
**HttpClient**

- For retry, the options to be passed on to the method implementing the requested verb, including curl options. Otherwise, curl options, only those in the acceptable set from 

  ```cpp
curl::curl_options()
  ```

  except the following: httpget, httppost, post, postfields, postfield-size, and customrequest

- pause_base,pause_cap,pause_min - basis, maximum, and minimum for calculating wait time for retry. Wait time is calculated according to the exponential backoff with full jitter algorithm. Specifically, wait time is chosen randomly between pause_min and the lesser of pause_base * 2 and pause_cap, with pause_base doubling on each subsequent retry attempt. Use pause_cap = Inf to not terminate retrying due to cap of wait time reached.

- times - the maximum number of times to retry. Set to Inf to not stop retrying due to exhausting the number of attempts.

- terminate_on,retry_only_on - a vector of HTTP status codes. For terminate_on, the status codes for which to terminate retrying, and for retry_only_on, the status codes for which to retry the request.

- onwait - a callback function if the request will be retried and a wait time is being applied. The function will be passed two parameters, the response object from the failed request, and the wait time in seconds. Note that the time spent in the function effectively adds to the wait time, so it should be kept simple.

**Value**

an **HttpResponse** object

**handles**

curl handles are re-used on the level of the connection object, that is, each HttpClient object is separate from one another so as to better separate connections.

If you don’t pass in a curl handle to the handle parameter, it gets created when a HTTP verb is called. Thus, if you try to get handle after creating a HttpClient object only passing url parameter, handle will be NULL. If you pass a curl handle to the handle parameter, then you can get the handle from the HttpClient object. The response from a http verb request does have the handle in the handle slot.

**Note**

A little quirk about curl is that because user agent string can be passed as either a header or a curl option (both lead to a User-Agent header being passed in the HTTP request), we return the user agent string in the request_headers list of the response even if you pass in a useragent string as a curl option. Note that whether you pass in as a header like User-Agent or as a curl option like useragent, it is returned as request_headers$User-Agent so at least accessing it in the request headers is consistent.

**See Also**

post-requests, delete-requests, http-headers, writing-options, cookies, hooks
## Examples

```r
## Not run:
# set your own handle
(h <- handle("https://httpbin.org"))
(x <- HttpClient$new(handle = h))
x$handle
x$url
(out <- x$get("get"))
x$handle
x$url
class(out)
out$handle
out$request_headers
out$response_headers
out$response_headers_all

# if you just pass a url, we create a handle for you
# this is how most people will use HttpClient
(x <- HttpClient$new(url = "https://httpbin.org"))
x$url
x$handle # is empty, it gets created when a HTTP verb is called
(r1 <- x$get('get'))
x$url
x$handle
r1$url
r1$handle
r1$content
r1$response_headers
r1$parse()

(res_get2 <- x$get('get', query = list(hello = "world")))
res_get2$parse()
library("jsonlite")
jsonlite::fromJSON(res_get2$parse())

# post request
(res_post <- x$post('post', body = list(hello = "world")))

## empty body request
x$post('post')

# put request
(res_put <- x$put('put'))

# delete request
(res_delete <- x$delete('delete'))

# patch request
(res_patch <- x$patch('patch'))

# head request
(res_head <- x$head())
```
# arbitrary verb
(x <- HttpClient$new(url = "https://httpbin.org"))
x$verb('get')
x$verb('GET')
x$verb('GET', query = list(foo = "bar"))
x$verb('retry', 'GET', path = "status/400")

# retry, by default at most 3 times
(res_get <- x$retry("GET", path = "status/400"))

# retry, but not for 404 NOT FOUND
(res_get <- x$retry("GET", path = "status/404", terminate_on = c(404)))

# retry, but only for exceeding rate limit (note that e.g. Github uses 403)
(res_get <- x$retry("GET", path = "status/429", retry_only_on = c(403, 429)))

# query params are URL encoded for you, so DO NOT do it yourself
## if you url encode yourself, it gets double encoded, and that's bad
(x <- HttpClient$new(url = "https://httpbin.org"))
res <- x$get("get", query = list(a = 'hello world'))

# get full url before the request is made
(x <- HttpClient$new(url = "https://httpbin.org"))
x$url_fetch()
x$url_fetch('get')
x$url_fetch('post')
x$url_fetch('get', query = list(foo = "bar"))

# access intermediate headers in response_headers_all
x <- HttpClient$new("https://doi.org/10.1007/978-3-642-40455-9_52-1")
bb <- x$get()
bb$response_headers_all

## End(Not run)

---

**HttpRequest**

*HTTP request object*

**Description**

HTTP request object

**Arguments**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>url</td>
<td>(character) A url. One of url or handle required.</td>
</tr>
<tr>
<td>opts</td>
<td>(list) curl options, a named list. See curl_options for available curl options</td>
</tr>
<tr>
<td>proxies</td>
<td>an object of class proxy, as returned from the proxy function. Supports one proxy for now</td>
</tr>
</tbody>
</table>
auth result of a call to the auth function, e.g. auth(user = "foo", pwd = "bar")
headers (list) a named list of headers
handle A handle, see handle
progress a function with logic for printing a progress bar for an HTTP request, ultimately passed down to curl. only supports httr::progress() for now
hooks (list) a named list (accepts: request, response) of functions (callbacks) to run on request and response objects. See hooks for more details.

Details
This R6 class doesn’t do actual HTTP requests as does HttpClient() - it is for building requests to use for async HTTP requests in AsyncVaried().

Note that you can access HTTP verbs after creating an HttpRequest object, just as you can with HttpClient. See examples for usage.

Also note that when you call HTTP verbs on a HttpRequest object you don’t need to assign the new object to a variable as the new details you’ve added are added to the object itself.

Methods
get(path, query, disk, stream, ...) Define a GET request
post(path, query, body, disk, stream, ...) Define a POST request
put(path, query, body, disk, stream, ...) Define a PUT request
patch(path, query, body, disk, stream, ...) Define a PATCH request
delete(path, query, body, disk, stream, ...) Define a DELETE request
head(path, ...) Define a HEAD request
verb(verb, ...) Use an arbitrary HTTP verb supported on this class Supported verbs: get, post, put, patch, delete, head
method() Get the HTTP method (if defined) - returns character string

See HttpClient() for information on parameters.

See Also
post-requests, delete-requests, http-headers, writing-options

Examples
## Not run:
x <- HttpRequest$new(url = "https://httpbin.org/get")
## note here how the HTTP method is shown on the first line to the right
x$get()

## assign to a new object to keep the output
z <- x$get()
### get the HTTP method
z$method()
HttpResponse

(x <- HttpRequest$new(url = "https://httpbin.org/get")$get())
x$url
x$payload

(x <- HttpRequest$new(url = "https://httpbin.org/post"))
x$post(body = list(foo = "bar"))

HttpRequest$new(
  url = "https://httpbin.org/get",
  headers = list(
    'Content-Type' = "application/json"
  )
)

# verb: get any http method
z <- HttpRequest$new(url = "https://httpbin.org/get")
res <- z$verb('get', query = list(hello = "world"))
res$response_headers

## End(Not run)

### Description

Base response object

### Arguments

- **method** (character) HTTP method
- **url** (character) A url, required
- **opts** (list) curl options
- **handle** A handle
- **status_code** (integer) status code
- **request_headers** (list) request headers, named list
- **response_headers** (list) response headers, named list
- **response_headers_all** (list) all response headers, including intermediate redirect headers, unnamed list of named lists
- **modified** (character) modified date
- **times** (vector) named vector
- **content** (raw) raw binary content response
- **request** request object, with all details
Usage

HttpResponse$new(method, url, opts, handle, status_code, request_headers, response_headers, response_headers_all, times, content, request)

Methods

parse(encoding = NULL, ...) Parse the raw response content to text
• encoding: (character) A character string describing the current encoding. If left as NULL, we attempt to guess the encoding. Passed to from parameter in iconv
• ...: additional parameters passed on to iconv (options: sub, mark, toRaw). See ?iconv for help
• returns: character

success() Was status code less than or equal to 201.
• returns: boolean

status_http(verbose = FALSE) Get HTTP status code, message, and explanation
• returns: object of class "http_code", a list with slots for status_code, message, and explanation

raise_for_status() Check HTTP status and stop with appropriate HTTP error code and message if >= 300. otherwise use httpcode. If you have fauxpas installed we use that.
• returns: stop or warn with message

raise_for_ct(type, charset = NULL, behavior = "stop") Check response content-type; stop or warn if not matched. Parameters:
• type: (character) a mime type to match against; see mime::mimemap for allowed values
• charset: (character) if a charset string given, we check that it matches the charset in the content type header. default: NULL
• behavior: (character) one of stop (default) or warning

raise_for_ct_html(charset = NULL, behavior = "stop") Check that the response content-type is text/html; stop or warn if not matched. Parameters: see raise_for_ct()

raise_for_ct_json(charset = NULL, behavior = "stop") Check that the response content-type is application/json; stop or warn if not matched. Parameters: see raise_for_ct()

raise_for_ct_xml(charset = NULL, behavior = "stop") Check that the response content-type is application/xml; stop or warn if not matched. Parameters: see raise_for_ct()

See Also

ccontent-types

Examples

## Not run:
x <- HttpResponse$new(method = "get", url = "https://httpbin.org")
x$url
x$method
Mocking HTTP requests

Description

Mocking HTTP requests

Usage

mock(on = TRUE)

Arguments

on

(logical) turn mocking on with TRUE or turn off with FALSE. By default is FALSE

Details

webmockr package required for mocking behavior

Examples

## Not run:

if (interactive()) {
  # load webmockr
  library(webmockr)
  library(crul)
URL <- "https://httpbin.org"

# turn on mocking
crul::mock()

# stub a request
stub_request("get", file.path(URL, "get"))
webmockr::webmockr_stub_registry

# create an HTTP client
(x <- HttpClient$new(url = URL))

# make a request - matches stub - no real request made
x$get("get")

# allow net connect
webmockr::webmockr_allow_net_connect()

x$get("get", query = list(foo = "bar"))
webmockr::webmockr_disable_net_connect()

x$get("get", query = list(foo = "bar"))

## End(Not run)

---

ok check if a url is okay

Description
check if a url is okay

Usage

ok(x, status = 200L, info = TRUE, ...)

Arguments

x either a URL as a character string, or an object of class HttpClient
status (integer) an HTTP status code, must be an integer. By default this is 200L, since this is the most common signal that a URL is okay, but there may be cases in which your URL is okay if it's a 201L, or some other status code.
info (logical) in the case of an error, do you want a message() about it? Default: TRUE
... args passed on to HttpClient

Details
We internally verify that status is an integer and in the known set of HTTP status codes, and that info is a boolean
Value

a single boolean, if TRUE the URL is up and okay, if FALSE it is down.

Examples

```r
## Not run:
# 200
ok("https://google.com")
# 200
ok("https://httpbin.org/status/200")
# 404
ok("https://httpbin.org/status/404")
# doesn't exist
ok("https://stuff.bar")
# doesn't exist
ok("stuff")

# with HttpClient
z <- crul::HttpClient$new("https://httpbin.org/status/404",
   opts = list(verbose = TRUE))
ok(z)

## End(Not run)
```

---

### Paginator

#### Paginator client

**Description**

A client to help you paginate

**Arguments**

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>client</td>
<td>an object of class HttpClient, from a call to HttpClient</td>
</tr>
<tr>
<td>by</td>
<td>(character) how to paginate. Only 'query_params' supported for now. In the future will support 'link_headers' and 'cursor'. See Details.</td>
</tr>
<tr>
<td>limit_param</td>
<td>(character) the name of the limit parameter. Default: limit</td>
</tr>
<tr>
<td>offset_param</td>
<td>(character) the name of the offset parameter. Default: offset</td>
</tr>
<tr>
<td>limit</td>
<td>(numeric/integer) the maximum records wanted</td>
</tr>
<tr>
<td>limit_chunk</td>
<td>(numeric/integer) the number by which to chunk requests, e.g., 10 would be be each request gets 10 records</td>
</tr>
<tr>
<td>progress</td>
<td>(logical) print a progress bar, using utils::txtProgressBar. Default: FALSE.</td>
</tr>
</tbody>
</table>
Details

Methods

get(path, query, ...) make a paginated GET request
post(path, query, body, encode, ...) make a paginated POST request
put(path, query, body, encode, ...) make a paginated PUT request
patch(path, query, body, encode, ...) make a paginated PATCH request
delete(path, query, body, encode, ...) make a paginated DELETE request
head(path, ...) make a paginated HEAD request - not sure if this makes any sense or not yet
responses() list responses - returns: a list of HttpResponse objects, empty list before requests made
parse(encoding = "UTF-8") parse content - returns: character vector, empty character vector before requests made
status_code() (integer) HTTP status codes - returns: numeric vector, empty numeric vector before requests made
status() (list) HTTP status objects - returns: a list of http_code objects, empty list before requests made
content() raw content - returns: raw list, empty list before requests made
times() curl request times - returns: list of named numeric vectors, empty list before requests made
url_fetch(path, query) get URLs that would be sent (i.e., before executing the request). the only things that change the URL are path and query parameters; body and any curl options don’t change the URL - returns: character vector of URLs

See HttpClient() for information on parameters.

Value

a list, with objects of class HttpResponse(). Responses are returned in the order they are passed in.

Methods to paginate

Supported now:

• query_params: the most common way, so is the default. This method involves setting how many records and what record to start at for each request. We send these query parameters for you.

Supported later:

• link_headers: link headers are URLs for the next/previous/last request given in the response header from the server. This is relatively uncommon, though is recommended by JSONAPI and is implemented by a well known API (GitHub).
• cursor: this works by a single string given back in each response, to be passed in the subsequent response, and so on until no more records remain. This is common in Solr
Examples

## Not run:
(x <- HttpClient$new(url = "https://httpbin.org"))
(res_post <- x$post('post', body = list(hello = "world"), verbose = TRUE))
(res_post <- x$post('post', body = "hello world", verbose = TRUE))

## empty body request
x$post('post')

## form requests
(cli <- HttpClient$new(
  url = "https://httpbin.org/post",
  opts = list(verbose = TRUE)
))
res <- cli$post(
  encode = "form",
  body = list(
    custname = 'Jane',
    custtel = '444-4444',
    size = 'small',
    topping = 'bacon',
    comments = 'make it snappy'
  )
)
jsonlite::fromJSON(res$parse("UTF-8"))

(x <- HttpClient$new(url = "https://httpbin.org"))
res <- x$post("post",
  encode = "json",
  body = list(
    genus = 'Gagea',
    species = 'pratensis'  
  )
)
jsonlite::fromJSON(res$parse())

# PUT requests
(x <- HttpClient$new(url = "https://httpbin.org"))
(res <- x$put(path = "put",
  encode = "json",
  body = list(
    genus = 'Gagea',
    species = 'pratensis'  
  )
))
jsonlite::fromJSON(res$parse("UTF-8"))

res <- x$put("put", body = "foo bar")
jsonlite::fromJSON(res$parse("UTF-8"))

# PATCH requests
(x <- HttpClient$new(url = "https://httpbin.org"))
(res <- x$patch(path = "patch",
  encode = "json",
  body = list(
    genus = 'Gagea',
    species = 'pratensis'  
  )
))
jsonlite::fromJSON(res$parse("UTF-8"))

res <- x$patch("patch", body = "foo bar")
jsonlite::fromJSON(res$parse("UTF-8"))

# Upload files
## image
path <- file.path(Sys.getenv("R_DOC_DIR"), "html/logo.jpg")
(x <- HttpClient$new(url = "https://httpbin.org"))
res <- x$post(path = "post", body = list(y = upload(path)))
res$content

## text file, in a list
(x <- HttpClient$new(url = "https://httpbin.org"))
file <- upload(system.file("CITATION"))
res <- x$post(path = "post", body = list(y = file))
jsonlite::fromJSON(res$parse("UTF-8"))

## text file, as data
res <- x$post(path = "post", body = file)
jsonlite::fromJSON(res$parse("UTF-8"))

## End(Not run)

---

**progress**

### progress bars

**Description**

progress bars

**Details**

pass `httr::progress()` to progress param in `HttpClient`, which pulls out relevant info to pass down to `curl`

if file sizes known you get progress bar; if file sizes not known you get bytes downloaded

See the README for examples

---

**proxies**

### proxy options

**Description**

proxy options
Usage

proxy(url, user = NULL, pwd = NULL, auth = "basic")

Arguments

url (character) URL, with scheme (http/https), domain and port (must be numeric). required.
user (character) username, optional
pwd (character) password, optional
auth (character) authentication type, one of basic (default), digest, digest_ie, gssnegotiate, ntlm, any or NULL. optional

Details

See http://proxylist.hidemyass.com/ for a list of proxies you can use

Examples

proxy("http://97.77.104.22:3128")
proxy("97.77.104.22:3128")
proxy("http://97.77.104.22:3128", "foo", "bar")
proxy("97.77.104.22:3128", "foo", "bar", auth = "digest")
proxy("http://97.77.104.22:3128", "foo", "bar", auth = "ntlm")

# socks
proxy("socks5://localhost:9050/", auth = NULL)

## Not run:
# with proxy (look at request/outgoing headers)
# (res <- HttpClient$new(
#   url = "http://www.google.com",
#   proxies = proxy("http://google.com"),
# ))
# res$proxies
# res$get(verbos = TRUE)

# vs. without proxy (look at request/outgoing headers)
# (res2 <- HttpClient$new(url = "http://www.google.com"))
# res2$get(verbos = TRUE)

# Use authentication
# (res <- HttpClient$new(
#   url = "http://google.com",
#   proxies = proxy("http://97.77.104.22:3128", user = "foo", pwd = "bar")
# ))

# another example
# (res <- HttpClient$new(
#   url = "http://ip.tyk.nu/",

```r
# proxies = proxy("http://200.29.191.149:3128")
#
# res$get()$parse("UTF-8")

## End(Not run)
```

### upload

 upload file

#### Description

 upload file

#### Usage

 upload(path, type = NULL)

#### Arguments

- **path** (character) a single path, file must exist
- **type** (character) a file type, guessed by `mime::guess_type` if not given

### url_build

 Build and parse URLs

#### Description

 Build and parse URLs

#### Usage

 url_build(url, path = NULL, query = NULL)

 url_parse(url)

#### Arguments

- **url** (character) a url, length 1
- **path** (character) a path, length 1
- **query** (list) a named list of query parameters

#### Value

 url_build returns a character string URL; url_parse returns a list with URL components
Examples

```r
url_build("https://httpbin.org")
url_build("https://httpbin.org", "get")
url_build("https://httpbin.org", "post")
url_build("https://httpbin.org", "get", list(foo = "bar"))

url_parse("httpbin.org")
url_parse("http://httpbin.org")
url_parse(url = "https://httpbin.org")
url_parse("https://httpbin.org/get")
url_parse("https://httpbin.org/get?foo=bar")
url_parse("https://httpbin.org/get?foo=bar&stuff=things")
url_parse("https://httpbin.org/get?foo=bar&stuff=things[]")
```

---

**HTTP verb info: DELETE**

### Description

The DELETE method deletes the specified resource.

### The DELETE method

The DELETE method requests that the origin server remove the association between the target resource and its current functionality. In effect, this method is similar to the `rm` command in UNIX: it expresses a deletion operation on the URI mapping of the origin server rather than an expectation that the previously associated information be deleted.

See [https://tools.ietf.org/html/rfc7231#section-4.3.5](https://tools.ietf.org/html/rfc7231#section-4.3.5) for further details.

### References

[https://tools.ietf.org/html/rfc7231#section-4.3.5](https://tools.ietf.org/html/rfc7231#section-4.3.5)

### See Also

- crul-package

Other verbs: `verb-GET`, `verb-HEAD`, `verb-PATCH`, `verb-POST`, `verb-PUT`

### Examples

```r
## Not run:
x <- HttpClient$new(url = "https://httpbin.org")
x$delete(path = 'delete')

## End(Not run)
```
Description

The GET method requests a representation of the specified resource. Requests using GET should only retrieve data.

The GET method

The GET method requests transfer of a current selected representation for the target resource. GET is the primary mechanism of information retrieval and the focus of almost all performance optimizations. Hence, when people speak of retrieving some identifiable information via HTTP, they are generally referring to making a GET request.

It is tempting to think of resource identifiers as remote file system pathnames and of representations as being a copy of the contents of such files. In fact, that is how many resources are implemented (see Section 9.1 (https://tools.ietf.org/html/rfc7231#section-9.1) for related security considerations). However, there are no such limitations in practice. The HTTP interface for a resource is just as likely to be implemented as a tree of content objects, a programmatic view on various database records, or a gateway to other information systems. Even when the URI mapping mechanism is tied to a file system, an origin server might be configured to execute the files with the request as input and send the output as the representation rather than transfer the files directly. Regardless, only the origin server needs to know how each of its resource identifiers corresponds to an implementation and how each implementation manages to select and send a current representation of the target resource in a response to GET.

A client can alter the semantics of GET to be a "range request", requesting transfer of only some part(s) of the selected representation, by sending a Range header field in the request (RFC7233: https://tools.ietf.org/html/rfc7233).

A payload within a GET request message has no defined semantics; sending a payload body on a GET request might cause some existing implementations to reject the request.

The response to a GET request is cacheable; a cache MAY use it to satisfy subsequent GET and HEAD requests unless otherwise indicated by the Cache-Control header field (Section 5.2 of RFC7234: https://tools.ietf.org/html/rfc7234#section-5.2).

References

https://tools.ietf.org/html/rfc7231#section-4.3.1

See Also

crul-package

Other verbs: verb-DELETE, verb-HEAD, verb-PATCH, verb-POST, verb-PUT
Examples

```r
## Not run:
x <- HttpClient$new(url = "https://httpbin.org")
x$get(path = 'get')
## End(Not run)
```

---

**HTTP verb info: HEAD**

**Description**

The HEAD method asks for a response identical to that of a GET request, but without the response body.

**The HEAD method**

The HEAD method is identical to GET except that the server MUST NOT send a message body in the response (i.e., the response terminates at the end of the header section). The server SHOULD send the same header fields in response to a HEAD request as it would have sent if the request had been a GET, except that the payload header fields MAY be omitted. This method can be used for obtaining metadata about the selected representation without transferring the representation data and is often used for testing hypertext links for validity, accessibility, and recent modification.

See [https://tools.ietf.org/html/rfc7231#section-4.3.2](https://tools.ietf.org/html/rfc7231#section-4.3.2) for further details.

**References**

[https://tools.ietf.org/html/rfc7231#section-4.3.2](https://tools.ietf.org/html/rfc7231#section-4.3.2)

**See Also**

crul-package

Other verbs: verb=DELETE, verb=GET, verb=PATCH, verb=POST, verb=PUT

**Examples**

```r
## Not run:
x <- HttpClient$new(url = "https://httpbin.org")
x$head()
## End(Not run)
```
HTTP verb info: PATCH

Description

The PATCH method is used to apply partial modifications to a resource.

The PATCH method requests that a set of changes described in the request entity be applied to the resource identified by the Request-URI. The set of changes is represented in a format called a "patch document" identified by a media type. If the Request-URI does not point to an existing resource, the server MAY create a new resource, depending on the patch document type (whether it can logically modify a null resource) and permissions, etc.


References


See Also

crut-package

Other verbs: verb-DELETE, verb-GET, verb-HEAD, verb-POST, verb-PUT

Examples

```r
## Not run:
x <- HttpClient$new(url = "https://httpbin.org")
x$patch(path = 'quotesingle.Varpatchquotesingle.Var', body = list(hello = "mars"))

## End(Not run)
```

HTTP verb info: POST

Description

The POST method is used to submit an entity to the specified resource, often causing a change in state or side effects on the server.
The POST method

If one or more resources has been created on the origin server as a result of successfully processing a POST request, the origin server SHOULD send a 201 (Created) response containing a Location header field that provides an identifier for the primary resource created (Section 7.1.2 https://tools.ietf.org/html/rfc7231#section-7.1.2) and a representation that describes the status of the request while referring to the new resource(s).

See https://tools.ietf.org/html/rfc7231#section-4.3.3 for further details.

See Also

See Also

crul-package

Other verbs: verb-DELETE, verb-GET, verb-HEAD, verb-PATCH, verb-PUT

Examples

## Not run:
x <- HttpClient$new(url = "https://httpbin.org")
x$post(path = '/post', body = list(hello = "world"))

## End(Not run)

---

**HTTP verb info: PUT**

### Description

The PUT method replaces all current representations of the target resource with the request payload.

### The PUT method

The PUT method requests that the state of the target resource be created or replaced with the state defined by the representation enclosed in the request message payload. A successful PUT of a given representation would suggest that a subsequent GET on that same target resource will result in an equivalent representation being sent in a 200 (OK) response. However, there is no guarantee that such a state change will be observable, since the target resource might be acted upon by other user agents in parallel, or might be subject to dynamic processing by the origin server, before any subsequent GET is received. A successful response only implies that the user agent’s intent was achieved at the time of its processing by the origin server.

If the target resource does not have a current representation and the PUT successfully creates one, then the origin server MUST inform the user agent by sending a 201 (Created) response. If the target resource does have a current representation and that representation is successfully modified
in accordance with the state of the enclosed representation, then the origin server MUST send either a 200 (OK) or a 204 (No Content) response to indicate successful completion of the request. See https://tools.ietf.org/html/rfc7231#section-4.3.4 for further details.

References

https://tools.ietf.org/html/rfc7231#section-4.3.4

See Also
crul-package

Other verbs: verb=DELETE, verb=GET, verb=HEAD, verb=PATCH, verb=POST

Examples

## Not run:
x <- HttpClient$new(url = "https://httpbin.org")
x$put(path = 'put', body = list(foo = "bar"))

## End(Not run)
files <- replicate(5, tempfile())
(res <- cc$get(disk = files, verbose = TRUE))
lapply(files, readLines)

## Async varied
### disk
f <- tempfile()
g <- tempfile()
req1 <- HttpRequest$new(url = "https://httpbin.org/get")$get(disk = f)
req2 <- HttpRequest$new(url = "https://httpbin.org/post")$post(disk = g)
req3 <- HttpRequest$new(url = "https://httpbin.org/get")$get()
(out <- AsyncVaried$new(req1, req2, req3))
out$request()
out$content()
readLines(f)
readLines(g)
out$parse()
close(file(f))
close(file(g))

### stream - to console
fun <- function(x) print(x)
req1 <- HttpRequest$new(url = "https://httpbin.org/get"
)$get(query = list(foo = "bar"), stream = fun)
req2 <- HttpRequest$new(url = "https://httpbin.org/get"
)$get(query = list(hello = "world"), stream = fun)
(out <- AsyncVaried$new(req1, req2))
out$request()
out$content()

### stream - to an R object
lst <- list()
fun <- function(x) lst <<- append(lst, list(x))
req1 <- HttpRequest$new(url = "https://httpbin.org/get"
)$get(query = list(foo = "bar"), stream = fun)
req2 <- HttpRequest$new(url = "https://httpbin.org/get"
)$get(query = list(hello = "world"), stream = fun)
(out <- AsyncVaried$new(req1, req2))
out$request()
lst

cat(vapply(lst, function(z) rawToChar(z$content), ","), sep = "\n")
Index

*Topic datasets
  Async, 4
  AsyncVaried, 7
  HttpClient, 19
  HttpRequest, 23
  HttpResponse, 25
  Paginator, 29

Async, 3, 4, 8
Async(), 3
AsyncVaried, 3, 5, 7
AsyncVaried(), 3, 24
auth, 10, 20, 24
auth(), 3, 14

content-types, 3, 11, 26
cookies, 13, 21
crul (crul-package), 2
crul-options, 14
crul-package, 2, 36–41
crul_settings (crul-options), 14
crul_settings(), 3
curl-options, 15
curl::curl_fetch_disk(), 20
curl::curl_fetch_stream(), 20
curl::curl_options(), 14, 15, 21
curl::new_handle(), 17
curl_options, 20, 23
delete-requests, 16, 21, 24

handle, 17, 20, 24
hooks, 17, 20, 21, 24
http-headers, 18, 21, 24
HttpClient, 3, 5, 7, 18, 19, 28, 29, 33
HttpClient(), 3, 4, 24, 30
HttpRequest, 3, 23
HttpRequest(), 3, 7
HttpResponse, 5, 7, 8, 11, 12, 21, 25
HttpResponse(), 3, 5, 30

mime::guess_type, 35
mime::mimemap, 12, 26
mock, 4, 27
mock(), 3, 14
ok, 28

Paginator, 29
Paginator(), 3
post-requests, 21, 24, 31
progress, 33
proxies, 33
proxy, 20, 23
proxy (proxies), 33
proxy(), 3, 14

set_auth (crul-options), 14
set_auth(), 3
set_headers (crul-options), 14
set_headers(), 3
set_opts (crul-options), 14
set_opts(), 3
set_proxy (crul-options), 14
set_proxy(), 3

timeout (curl-options), 15
upload, 35
upload(), 3
url_build, 35
url_parse (url_build), 35
user-agent (curl-options), 15
utils::txtProgressBar, 29

verb-DELETE, 3, 36
verb-GET, 3, 37
verb-HEAD, 3, 38
verb-PATCH, 3, 39
verb-POST, 3, 39
verb-PUT, 3, 40
verbose (curl-options), 15
writing-options, 21, 24, 41