

Package ‘epivizrServer’

October 17, 2020

Type Package

Title WebSocket server infrastructure for epivizr apps and packages

Version 1.16.0

URL <https://epiviz.github.io>

BugReports <https://github.com/epiviz/epivizrServer>

Description This package provides objects to manage WebSocket connections to epiviz apps. Other epivizr package use this infrastructure.

biocViews Infrastructure, Visualization

VignetteBuilder knitr

Depends R (>= 3.2.3), methods

Imports httpuv (>= 1.3.0), R6 (>= 2.0.0), rjson, mime (>= 0.2)

Suggests testthat, knitr, rmarkdown, BiocStyle

License MIT + file LICENSE

LazyData true

Collate 'IndexedArray-class.R' 'Queue-class.R' 'utils.R' 'zzz.R'
'middleware-plus-supporting.R' 'dummyTestPage.R'
'EpivizrServer-class.R' 'createServer.R'

RoxygenNote 7.1.0

NeedsCompilation no

Author Hector Corrada Bravo [aut, cre]

Maintainer Hector Corrada Bravo <hcorrada@gmail.com>

git_url <https://git.bioconductor.org/packages/epivizrServer>

git_branch RELEASE_3_11

git_last_commit 81dbe93

git_last_commit_date 2020-04-27

Date/Publication 2020-10-16

R topics documented:

createServer	2
EpivizServer-class	3
IndexedArray-class	4
json_parser	4
json_writer	5
Queue-class	6

Index	7
--------------	----------

createServer	<i>Create a new EpivizServer object</i>
--------------	---

Description

Create a new EpivizServer object

Usage

```
createServer(
  port = 7123L,
  static_site_path = "",
  try_ports = FALSE,
  daemonized = NULL,
  verbose = FALSE,
  non_interactive = FALSE
)
```

Arguments

port (int) port to which server will listen to.

static_site_path (character) path to serve static html files.

try_ports (logical) try various ports until an open port is found.

daemonized (logical) run in background using httpuv's daemonized libuv server.

verbose (logical) print verbose output.

non_interactive (logical) run in non-interactive mode. For development purposes only.

Value

an [EpivizServer](#) object

See Also

[EpivizServer](#) for the class of objects returned

Examples

```
server <- createServer(port=7123,
  verbose=TRUE
)
```

EpivizServer-class *Class providing WebSocket connection server*

Description

Class providing WebSocket connection server

Details

The most important aspect of the API of this server are methods `register_action` and `send_request`. These are used to interact with the epiviz JS app through the provided websocket connection. `register_action(action, callback)` registers a callback function to be executed upon request from the epiviz JS app. When the server receives a JSON message through the websocket, it checks for an action field in the received request message, and then evaluates the expression `callback(message_data)` where `message_data` is obtained from the data field in the received message. A response will be sent to the epiviz app with field data populated with the result of the callback. If an error occurs during evaluation of the callback function, the response will be sent with field success set to false.

To send requests to the JS app, method `send_request(request_data, callback)` should be used. This sends a request to the JS app with the data field populated with argument `request_data`. Once a response is received (with field success equal to true) the expression `callback(response_data)` is evaluated where `response_data` is obtained from the data field in the received response message.

Value

RC object with methods for communication with epiviz JS app

Methods

`has_action(action)` Check if a callback is registered for given action<character>, <logical>. (See Details)

`has_request_waiting()` Check if there is a sent request waiting for a response from JS app, <logical>

`is_closed()` Check if server is closed, <logical>

`is_daemonized()` Check if server is running in background, <logical>

`is_interactive()` Check if server is running in interactive mode, <logical>

`is_socket_connected()` Check if there is an open websocket connection to JS app, <logical>

`register_action(action, callback)` Register a callback<function> to evaluate when epiviz JS sends a request for given action<character>. (See Details)

`run_server(...)` Run server in blocking mode

`send_request(request_data, callback)` Send request to epiviz JS app with given request_data<list>, and evaluate callback<function> when response arrives. (See Details)

`service()` Listen to requests from server. Only has effect when non-daemonized

`start_server()` Start the underlying httpuv server, daemonized if applicable

`stop_server()` Stop the underlying httpuv server

`stop_service()` Stop listening to requests from server. Only has effect when non-daemonized.

unregister_action(action) Unregister a callback function for given action<character> (if registered). (See Details)

wait_to_clear_requests(timeout = 3L) Wait for timeout seconds to clear all pending requests.

Examples

```
server <- createServer()
server$register_action("getData", function(request_data) {
  list(x=1,y=3)
})

server$start_server()

server$send_request(list(x=2,y=5), function(response_data) {
  cat(response_data$x)
})

server$stop_server()
```

IndexedArray-class *Class providing an indexed array (hashtable)*

Description

Class providing an indexed array (hashtable)

Methods

append(item) Append item to tail of array, returns id of item <int>

empty() Remove all items from array

get(id) Get item with given id<int>, returns <ANY>, returns NULL if no item with given id

length() Return number of items on array <int>

json_parser *JSON parser used by this package*

Description

Currently this just renames [fromJSON](#) in the rjson package.

Usage

```
json_parser(
  json_str,
  file,
  method = "C",
  unexpected.escape = "error",
  simplify = TRUE
)
```

Arguments

json_str	json string to parse
file	file to read json_Str from
method	method used to parse json
unexpected.escape	handling escape characters, one of error, skip, keep
simplify	if TRUE, convert json-encoded lists to vectors

Value

a JSON object

See Also

[fromJSON](#)

json_writer

JSON writer used by this package

Description

Currently this just renames [toJSON](#) in the rjson package.

Usage

```
json_writer(x, indent = 0, method = "C")
```

Arguments

x	object to write to json
indent	integer specifying how much indentation to use when formatting the JSON object; if 0, no pretty-formatting is used
method	method used to write json

Value

a string with JSON encoding of object

See Also

[toJSON](#)

Queue-class

Class providing a queue data structure

Description

Class providing a queue data structure

Methods

`empty()` Remove all items from queue

`has_more()` Return TRUE if there are more items in queue <logical>

`length()` Return the number of items in queue <int>

`pop()` Pop next item from queue (returns NULL if queue is empty)

`push(item)` Push <item> onto queue

Index

`createServer`, [2](#)

`EpivizServer`, [2](#)

`EpivizServer (EpivizServer-class)`, [3](#)

`EpivizServer-class`, [3](#)

`fromJSON`, [4](#), [5](#)

`IndexedArray (IndexedArray-class)`, [4](#)

`IndexedArray-class`, [4](#)

`json_parser`, [4](#)

`json_writer`, [5](#)

`Queue (Queue-class)`, [6](#)

`Queue-class`, [6](#)

`toJSON`, [5](#)