

Package ‘R4CouchDB’

October 12, 2022

Type Package

Title A R Convenience Layer for CouchDB 2.0

Version 0.7.5

Date 2017-02-25

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URL <https://github.com/wactbprot/R4CouchDB>

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Description Provides a collection of functions for basic database and document management operations such as add, get, list access or delete. Every cdbFunction() gets and returns a list() containing the connection setup. Such a list can be generated by cdbIni().

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LazyLoad yes

Depends R (>= 2.7.0), bitops, RCurl (>= 1.95), RJSONIO (>= 1.3)

Suggests roxygen2 (>= 4.0), testthat (>= 0.8)

NeedsCompilation no

Repository CRAN

Date/Publication 2017-03-01 19:05:42

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cdbAddAttachment	<i>Add attachments</i>
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Description

This function adds attachments to a database document that already exists.

Usage

```
cdbAddAttachment(cdb)
```

Arguments

cdb	The list cdb has to contain cdb\$fileName, cdb\$serverName, cdb\$DBName and a cdb\$id.
-----	--

Details

The function uses the Rcurl- function guessMIMEtype() to do exactly this: guessing the mime type of cdb\$fileName.

If the switch cdb\$attachmentsWithPath is set to TRUE the attachment is saved with the path. This behavior is default since version 0.2.5 of R4CouchDB

Value

cdb	The result is stored in cdb\$res
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Author(s)

wactbprot

Examples

```
## Not run:
ccc      <- cdbIni(DBName="r4couch_db")
ccc$dataList <- list(normalDistRand = rnorm(20))
ccc      <- cdbAddDoc(ccc)
# make a 3d plot (stolen from ?persp)
x        <- seq(-10, 10, length= 30)
y        <- x
```

```
f          <- function(x,y) {r <- sqrt(x^2+y^2); 10 * sin(r)/r }
z          <- outer(x, y, f)

z[is.na(z)] <- 1
op         <- par(bg = "black")
ccc$fileName <- "3dplot.pdf"

pdf(ccc$fileName)
persp(x, y, z,
      theta = 30,
      phi = 30,
      expand = 0.5,
      col = "lightblue")
dev.off()
# add the plot as attachment to the database
# it workes over ccc$fileName
ccc        <- cdbAddAttachment(ccc)

## End(Not run)
```

cdbAddDoc

Generates a new document

Description

This function adds a new document to an already existing database

Usage

```
cdbAddDoc(cdb)
```

Arguments

`cdb` The list `cdb` only has to contain a `cdb$dataList` which is not an empty `list()`.

Details

This function is called `addDoc` (which means add a new document). Therefore the `cdb$id` is requested using `getDbGetUuid()` for every document to add if no `cdb$id` is provided. If a `cdb$id` is provided the function fails when a document with the given id already exists. In this case one should use `getDbUpdateDoc()`. Since version v0.6 the function writes the `_rev` and `_id` key to the top level of `cdb$dataList`.

Value

`cdb` The couchdb response is stored in `cdb$res`

Author(s)

wactbprot

See Also

`cdbGetDoc()`

Examples

```
## Not run:
ccc          <- cdbIni()
# I assume a database at localhost:5984 already exists
ccc$DBName   <- "r4couchdb_db"
ccc$dataList <- list(normalDistRand = rnorm(20))
ccc          <- cdbAddDoc(ccc)

## End(Not run)
```

`cdbAddDocS`

This function adds multiple database documents with one request

Description

This is done via the `_bulk_docs` API provided by an already existing database.

Usage

```
cdbAddDocS(cdb)
```

Arguments

`cdb` `cdb$dataList` has to be a list of lists, `cdb$DBName`, `cdb$serverName` is needed.

Details

The `_bulk_docs` endpoint requires that `cdb$dataList` resolves to an json array. This is reached with e.g. `cdb$dataList <- list(list(...),list(...),...)`. Furthermore, `_bulk_docs` requires the documents to be wrapped in a key named `docs:[...]`; this is done by `cdbAddDocS()` if `cdb$dataList` is a list of lists. The user dont need to care.

At the moment the resulting `_rev` and `_id` will be not written back to the `cdb$dataList`. This means that a second call of `cdbAddDocS()` generates new Documents.

Value

`cdb` The couchdb response is stored in `cdb$res`

Author(s)

parisni, wactbprot

See Also

`cdbAddDoc()`

Examples

```
## Not run:
ccc          <- cdbIni()
# I assume a database at localhost:5984 already exists
ccc$DBName   <- "r4couchdb_db"
docs <- list()
for(i in 1:10){
  docs[[i]] <- list(normalDistRand = rnorm(20))
}
# docs is noe a list of 10 lists
ccc$dataList <- docs
# generating 10 database documents
cccAddDocS(ccc)$res

## End(Not run)
```

`cdbDeleteDoc`

Deletes a document from a database

Description

With a given `cdb$id` this function sends a http "DELETE" request to the url `.../cdb$id?rev=cdb$rev`.

Usage

`cdbDeleteDoc(cdb)`

Arguments

`cdb` Beside `cdb$serverName`, `cdb$port` and `cdb$DBName` the `cdb$id` must be given.
R errors are reported in `cdb$errors`

Value

`cdb` The result of the delete request is stored in `cdb$res`(whatever this means).

Author(s)

wactbprot

See Also

`cdbAddDoc()`

cdbGetConfig

Request couchdb config

Description

Function provides access to the `_config` api end point.

Usage

```
cdbGetConfig(cdb)
```

Arguments

`cdb` Only the connection settings `cdb$port` and `cdb$serverName` is needed.

Value

`cdb` The result of the request is stored in `cdb$res` after converting the answer into a list using `fromJSON()`.

Author(s)

wactbprot

See Also

`cdbMakeDB`

Examples

```
## Not run:  
cdbGetConfig(cdbIni())$res  
  
## End(Not run)
```

cdbGetDoc*Get a doc from CouchDB*

Description

With a given `cdb$id` this function requests the document.

Usage

```
cdbGetDoc(cdb)
```

Arguments

cdb Beside cdb\$serverName, cdb\$port and cdb\$DBName the cdb\$id must be given.
R errors are reported
in cdb\$errors

Value

cdb The result of the request is stored in cdb\$res after converting the answer into a
list using fromJSON(). If a list entry needed in cdb is not provided cdb\$error
gives some information.

Author(s)

wactbprot

See Also

cdbAddDoc()

Examples

```
## Not run:
ccc                    <- cdbIni()
ccc$newDBName         <- "r4couchdb_db"
ccc$dataList         <- list(normalDistRand = rnorm(20))
ccc                    <- cdbAddDoc(ccc)
cdbGetDoc(ccc)$res

## End(Not run)
```

cdbGetList

Receive list results from CouchDB

Description

The function provides accesses to CouchDB lists.

Usage

```
cdbGetList(cdb)
```

Arguments

cdb Beside the connection details (cdb\$port, cdb\$DBName ...) the cdb\$design cdb\$view
and cdb\$list is needed.

Details

Query params e.g. "reduce=false" or "group_level=1" can be provided in cdb\$queryParam. By now multiple params must be given in one string e.g. "a=b&c=d&e=f".

Value

cdb The result of the request is stored in cdb\$res after converting the json answer into a list using cdb\$fromJSON(). If a needed cdb (design, list, view, ...) entry was not provided cdb\$error says something about the R side.

Author(s)

wactbprot

cdbGetShow

Receive show results from CouchDB

Description

The function provides accesses to CouchDB shows.

Usage

```
cdbGetShow(cdb)
```

Arguments

cdb Beside the connection details (cdb\$port, cdb\$DBName ...) the cdb\$design and cdb\$show is needed.

Details

Query params e.g. "format=json" can be provided in cdb\$queryParam. Multiple params must be given in one string e.g. "a=b&c=d&e=f".

Value

cdb The result of the request is stored in cdb\$res after converting the json answer into a list using cdb\$fromJSON(). If a needed cdb entry was not provided cdb\$error provides information.

Author(s)

wactbprot

cdbGetUuid	<i>Function for request one id</i>
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Description

Function returns a 128bit uuid requested from CouchDB

Usage

```
cdbGetUuid(cdb)
```

Arguments

cdb	Only the connection settings cdb\$port and cdb\$serverName is needed.
-----	---

Details

Simple CouchDB API end point to `http://serverName:port/_uuids`.

Value

cdb	The result of the request is stored in cdb\$id after converting the answer into a list using <code>fromJSON()</code> .
-----	--

Author(s)

wactbprot

See Also

cdbMakeDB

Examples

```
## Not run:  
cdbGetUuid(cdbIni())$res  
  
## End(Not run)
```

`cdbGetUuidS`*Function for request some ids*

Description

Function returns a 128bit uuid requested from CouchDB

Usage

```
cdbGetUuidS(cdb)
```

Arguments

<code>cdb</code>	Only the connection settings <code>cdb\$port</code> , <code>cdb\$serverName</code> and <code>cdb\$count</code> is needed.
------------------	---

Details

CouchDB API provides the url `http://serverName:port/_uuids` for those clients who aren't able to create those ids. The number `N` of ids received from a CouchDB can be set by `cdb$count <- N` since version 0.6. The function writes to `cdb$res` (in opposite to `cdbGetUuid()` which writes to `cdb$id`)

Value

<code>cdb</code>	The result of the request is stored in <code>cdb\$res</code> after converting the answer into a list using <code>fromJSON()</code> .
------------------	--

Author(s)

wactbprot

See Also

`cdbMakeDB`

Examples

```
## Not run:  
ccc          <- cdbIni()  
ccc$count    <- 100  
cdbGetUuidS(ccc)$res  
  
## End(Not run)
```

cdbGetView	<i>Receive view results from CouchDB</i>
------------	--

Description

The function provides accesses to CouchDB views.

Usage

```
cdbGetView(cdb)
```

Arguments

cdb	Beside the connection details (cdb\$port,cdb\$DName ...) the cdb\$design and cdb\$view is needed.
-----	---

Details

Query params e.g. "reduce=false" or "group_level=1" can be provided in cdb\$queryParam

Value

cdb	The result of the request is stored in cdb\$res after converting the json answer into a list using fromJSON(). If a needed cdb list entry was not provided cdb\$error says something about the R side
-----	---

Note

For the moment only one cdb\$queryParam is possible. In the future maybe Duncans RJavaScript package can be used to generate views without leaving R.

Author(s)

wactbprot

cdbIni	<i>Ini function</i>
--------	---------------------

Description

Function returns a list with some default settings and often used functions such as cdb\$baseUrl.

Usage

```

cdbIni(serverName="localhost",
port="5984",
prot = "http",
DBName="",
uname = "",
pwd = "",
newDBName = "",
removeDBName = "",
id = "",
fileName = "",
design = "",
view = "",
list = "",
show = "",
queryParam = "",
encSub = "?",
count = 10,
dataList = list(),
attachmentsWithPath=TRUE,
digits = 7)

```

Arguments

serverName	server name
port	port
prot	name of the protocol default is http
DBName	name of database
uname	name of the user
pwd	password
newDBName	name of the database for cdbMakeDB()
removeDBName	name of the database to remove with cdbRemoveDB()
id	the document id to get, put, post or delete
fileName	for use in cdbAddAttachment
design	the name of the design used when asking a view or list
view	the name of a view to query
list	the name of a list to query
show	the name of a show to query
queryParam	additional query params
encSub	a character which is used as a replacement for chars who can not be converted by iconv
count	how many uuids should be returned by cdbGetUuidS()
dataList	a list containing data to post or update

`attachmentsWithPath` effects the result of the function `cdbAddAttachment` in the way the variable is named
`digits` digits kept at toJSON conversion

Details

The list: `cdb <- list(serverName = "localhost", ...)` is returned if the packages `library(RCurl)` and `library(RJSONIO)` are successfully loaded.

Value

`cdb` The R4CouchDB (method) chain(ing) list

Author(s)

wactbprot, parisni

Examples

```
## Not run:
ccc <- cdbIni(digits=13,
              DBName="r4couch_db",
              attachmentsWithPath=FALSE,
              dataList=list(normalDistRand = rnorm(20)))

## End(Not run)
```

`cdbListDB`

Returns all databases on the server

Description

Gives a list of all databases available at `cdb$serverName`.

Usage

```
cdbListDB(cdb)
```

Arguments

`cdb` Only the connection settings `cdb$port` and `cdb$serverName` is needed.

Details

The function uses the `_all_dbs` API end point .

Value

cdb The result of the request is stored in cdb\$res after converting the json answer into a list using cdb\$fromJSON().

Author(s)

wactbprot

See Also

cdbMakeDB

Examples

```
## Not run:
cdbListDB(cdbIni())$res

## End(Not run)
```

cdbMakeDB	<i>Creates a new database</i>
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Description

The name of the new database is taken from cdb\$newDBName.

Usage

```
cdbMakeDB(cdb)
```

Arguments

cdb The cdb have to provide cdb\$serverName, cdb\$port and cdb\$newDBName

Details

The work is done by getURL() from Duncans RCurl package.

After creating the new database the function makes the shortcut cdb\$DBName <- cdb\$newDBName so that further operations happen on the new created database. Finally cdb\$newDBName <- "".

Value

cdb The CouchDB answer is stored in cdb\$res. Any problems on the R side are reported in cdb\$error

Note

The convention for database naming should be implemented.

Author(s)

wactbprot

See Also

cdbUpdateDoc

Examples

```
## Not run:
ccc          <- cdbIni()
ccc$newDBName <- "r4couchdb_db"
ccc          <- cdbMakeDB(ccc)
ccc$res
ccc$removeDBName <- ccc$DBName
cdbRemoveDB(ccc)$res

## End(Not run)
```

cdbRemoveDB	<i>Function to remove a database</i>
-------------	--------------------------------------

Description

Removing a database means sending a http- "DELETE"- request to `http://cdb$serverName:cdb$port/...`

Usage

```
cdbRemoveDB(cdb)
```

Arguments

`cdb` The `cdb` has to provide `cdb$serverName`, `cdb$port` and `cdb$DBName`

Details

In `cdb` a entry `cdb$delDBName` should be provided for more explicit deleting respectively more secure removing.

Value

`cdb` The CouchDB answer is stored in `cdb$res`. Any problems on the R side are reportet in `cdb$error`

Author(s)

wactbprot

See Also

cdbMakeDB

Examples

```
## Not run:
ccc          <- cdbIni()
ccc$newDBName <- "r4couchdb_db"
ccc          <- cdbMakeDB(ccc)
ccc$res
ccc$removeDBName <- ccc$DBName
cdbRemoveDB(ccc)$res

## End(Not run)
```

cdbUpdateDoc

This function updates an existing doc

Description

This essentially means that a revision, corresponding to the '_id' has to be provided. If no '_rev' is given in the cdb list the function gets the doc from the db and takes the rev number for the update

Usage

```
cdbUpdateDoc(cdb)
```

Arguments

cdb the cdb connection configuration list must contain the cdb\$serverName, cdb\$port, cdb\$DBName and cdb\$id. The data which updates the data stored in the doc is provided in cdb\$dataList

Details

Updating a doc at couchdb means executing a http "PUT" request. The cdb list must contain the cdb\$serverName, cdb\$port, cdb\$DBName, cdb\$id. Since v0.6 the revision of the document should exist at the intended place: cdb\$dataList\$'_rev'.

getUrl() with customrequest = "PUT" does the work. If a needed cdb\$ list entry is not provided cdb\$error maybe says something about the R side.

Value

cdb The response of the request is stored in cdb\$res after converting the answer by means of fromJSON(). The revision provided by the response is used for updating the cdb\$dataList\$'_rev'.

Author(s)

wactbprot

See Also

`cdbInit()`

Examples

```
## Not run:
ccc          <- cdbIni()
# I assume a database at localhost:5984 already exists
ccc$DBName   <- "r4couchdb_db"
ccc$dataList <- list(normalDistRand = rnorm(20))
ccc          <- cdbAddDoc(ccc)

ccc$dataList$Date <- date()
ccc               <- cdbUpdateDoc(ccc)

## End(Not run)
```

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