Package 'nodbi'

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Title 'NoSQL' Database Connector

Description Simplified document database manipulation and analysis, including support for many 'NoSQL' databases, including document databases ('Elasticsearch', 'CouchDB', 'MongoDB'), 'key-value' databases ('Redis'), and (with limitations) SQLite/json1.

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LazyData true

URL https://docs.ropensci.org/nodbi/, https://github.com/ropensci/nodbi

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

Depends R (>= 2.10)

Encoding UTF-8

Language en-US

Imports data.table, jsonlite

Suggests sofa (>= 0.3.0), elastic (>= 1.0.0), mongolite (>= 1.6), redux, RSQLite (>= 2.2.4), DBI, testthat

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R topics documented:

`nodbi-package` *Document database connector*

Description

Supports NoSQL databases (Elasticsearch, CouchDB, MongoDB), key-value databases (Redis), and SQLite with json1 extension as in R package RSQLite.

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contacts *contacts*

Description

contacts

Usage

```
contacts
```

Format

A json string with ragged, nested contact details

diamonds *diamonds*

Description

diamonds

Format

A data frame with 53940 rows and 10 variables:

- price price in US dollars (\$326-\$18,823)
- carat weight of the diamond (0.2-5.01)
- cut quality of the cut (Fair, Good, Very Good, Premium, Ideal)
- color diamond colour, from J (worst) to D (best)
- clarity a measurement of how clear the diamond is (I1 (worst), SI1, SI2, VS1, VS2, VVS1, VVS2, IF (best))
- x length in mm (0-10.74)
- y width in mm (0-58.9)
- z depth in mm (0-31.8)
- depth total depth percentage = z / mean(x, y) = 2 * z / (x + y) (43-79)
- table width of top of diamond relative to widest point (43-95)

Source

from **ggplot2**

`docdb_create` *Create documents*

Description

Create documents

Usage

```
docdb_create(src, key, value, ...)
```

Arguments

`src`	source object, result of call to an src function
`key`	(character) A key (collection for MongoDB)
`value`	(data.frame) A single data.frame
`...`	Ignored

Details

Note that with etcd, you have to prefix a key with a forward slash.

Examples

```
## Not run:
# CouchDB
src <- src_couchdb()
docdb_create(src, key="mtcars2", value=mtcars)
docdb_get(src, "mtcars2")

# Elasticsearch
src <- src_elastic()
if (docdb_exists(src, "mtcars")) docdb_delete(src, "mtcars")
if (docdb_exists(src, "iris")) docdb_delete(src, "iris")
if (docdb_exists(src, "diamonds_small")) docdb_delete(src, "diamonds_small")
docdb_create(src, key = "mtcars", value = mtcars)
docdb_create(src, key = "iris", value = iris)
docdb_create(src, key = "diamonds_small", value = diamonds[1:3000L,])

# Redis
src <- src_redis()
docdb_create(src, key = "mtcars", value = mtcars)
docdb_get(src, "mtcars")
docdb_delete(src, "mtcars")

# MongoDB
src <- src_mongo(collection = "mtcars")
docdb_create(src, key = "mtcars", value = mtcars)
docdb_get(src, "mtcars")
```

```
# SQLite
src <- src_sqlite()
if (docdb_exists(src, "mtcars")) docdb_delete(src, "mtcars")
docdb_create(src, key = "mtcars", value = mtcars)
docdb_get(src, "mtcars")
if (docdb_exists(src, "contacts")) docdb_delete(src, "contacts")
## contacts is a dataset included in this package
contacts_df <- data.frame(contacts, stringsAsFactors = FALSE)
docdb_create(src, key = "contacts", value = contacts_df)
docdb_get(src, "contacts")[["friends"]]

## End(Not run)
```

`docdb_delete` *Delete documents or collections*

Description

Delete documents or collections

Usage

```
docdb_delete(src, key, ...)
```

Arguments

`src`	source object, result of call to src, an object of class `docdb_src`
`key`	(character) A key (collection for MongoDB and RSQLite)
`...`	For MongoDB and RSQLite: Can include a query for documents to delete, without query deletes collection

Details

Note that with etcd, you have to prefix a key with a forward slash.

Examples

```
## Not run:
# couchdb
(src <- src_couchdb())
docdb_create(src, "mtcars", mtcars)
docdb_get(src, "mtcars")
docdb_delete(src, "mtcars")

# elasticsearch
src <- src_elastic()
if (docdb_exists(src, "iris")) docdb_delete(src, "iris")
docdb_create(src, "iris", iris)
```

```
Sys.sleep(2)
docdb_get(src, "iris")
docdb_delete(src, "iris")

# Redis
src <- src_redis()
docdb_create(src, key = "mtcars", value = mtcars)
docdb_get(src, "mtcars")
docdb_delete(src, "mtcars")

# mongo
src <- src_mongo(collection = "iris")
docdb_create(src, "iris", iris)
docdb_get(src, "iris")
docdb_delete(src, "iris")

# SQLite
src <- src_sqlite()
docdb_create(src, "iris", iris)
(docdb_delete(src, "iris", query = '{"Species": {"$regex": "a$"}}'))
(docdb_delete(src, "iris"))

## End(Not run)
```

`docdb_exists` *Check if a database exists*

Description

Check if a database exists

Usage

```
docdb_exists(src, key, ...)
```

Arguments

`src`	source object, result of call to src
`key`	(chartacter) A key. ignored for mongo
`...`	Ignored for now

Details

Note that with etcd, you have to prefix a key with a forward slash.

Value

logical, `TRUE` or `FALSE`

Note

no docdb_exists method for MongoDB at this time

Examples

```
## Not run:
# CouchDB
(src <- src_couchdb())
docout <- docdb_create(src, key = "mtcars2", value = mtcars)
docdb_exists(src, "mtcars2")
docdb_exists(src, "asdfadf")

# Elasticsearch
(src <- src_elastic())
if (docdb_exists(src, "iris")) docdb_delete(src, "iris")
docdb_exists(src, "iris")
docdb_create(src, "iris", iris)
docdb_exists(src, "iris")
docdb_exists(src, "adfadf")

# Redis
(src <- src_redis())
docdb_create(src, "mtcars", mtcars)
docdb_exists(src, "mtcars")
docdb_exists(src, "asdfasf")

# MongoDB
src <- src_mongo(collection = "mtcars")
docdb_create(src, key = "mtcars", value = mtcars)
docdb_exists(src, "mtcars")

# SQLite
src <- src_sqlite()
docdb_create(src, "mtcars", mtcars)
docdb_exists(src, "mtcars")
docdb_exists(src, "nonExistingCollection")

## End(Not run)
```

`docdb_get` *Get documents*

Description

Get documents

Usage

```
docdb_get(src, key, limit = NULL, ...)
```

Arguments

src	source object, result of call to src
key	(character) A key (collection for mongo)
limit	(integer) number of records/rows to return. By default not passed, so you get all results. Only works for CouchDB, Elasticsearch, MongoDB and RSQLite; ignored for others
...	passed on to functions: • CouchDB: passed to sofa::db_alldocs() • Elasticsearch: passed to elastic::Search() • Redis: ignored • MongoDB: ignored • SQLite: ignored

Details

Note that with etcd, you have to prefix a key with a forward slash.

Examples

```
## Not run:
# CouchDB
src <- src_couchdb()
docout <- docdb_create(src, key = "mtcars2", value = mtcars)
docdb_get(src, "mtcars2")
docdb_get(src, "mtcars2", limit = 5)

# Elasticsearch
src <- src_elastic()
if (docdb_exists(src, "iris")) docdb_delete(src, "iris")
docdb_create(src, "iris", iris)
Sys.sleep(2)
docdb_get(src, "iris")
if (docdb_exists(src, "d2")) docdb_delete(src, "d2")
docdb_create(src, "d2", diamonds)
Sys.sleep(3)
docdb_get(src, "d2", limit = 1010)

# Redis
src <- src_redis()
docdb_create(src, "mtcars", mtcars)
docdb_get(src, "mtcars")

# Mongo
src <- src_mongo(collection = "mtcars")
docdb_create(src, "mtcars", mtcars)
docdb_get(src, "mtcars")
docdb_get(src, "mtcars", limit = 4)

# SQLite
```

```
src <- src_sqlite()
docdb_create(src, "mtcars", mtcars)
docdb_get(src, "mtcars", limit = 4L)

## End(Not run)
```

`docdb_query` *Get documents with a filtering query*

Description

Get documents with a filtering query

Usage

```
docdb_query(src, key, query, ...)
```

Arguments

`src`	source object, result of call to src
`key`	(character) A key (collection for mongo)
`query`	various, see Query section below.
`...`	Additional named parameters passed on to each package: • CouchDB: passed on to `sofa::db_query()` • Elasticsearch: passed on to `elastic::Search()` • MongoDB: passed on to the $find method of **mongolite**

Details

Note that with etcd, you have to prefix a key with a forward slash.

What is expected for each source

- CouchDB: a list, see docs for `sofa::db_query()`
- Elasticsearch: query parameters, see `elastic::Search()`; passed to the `query` parameter of `elastic::Search`, thus performs a URI based search where the query is passed in the URI instead of the body. In theory you can instead pass in a JSON or list to the body parameter, but if you want to do complicated Elasticsearch queries you may be better of using **elastic** package directly
- MongoDB: a JSON `query` string and optionally other parameters such as `fields`, see **mongolite**
- SQLite: arameter `query`, a JSON string; supported at the moment is only one level of $or or $and operators with $eq, $gt, $gte, $lt, $lte, $ne and $regex as tests. Optionally, `fields` a JSON string of fields to be returned from anywhere in the tree (in dot paths notation).

Not supported yet

- Redis

Examples

```
## Not run:
# CouchDB
(src <- src_couchdb())
if (docdb_exists(src, "mtcars2")) docdb_delete(src, "mtcars2")
invisible(docdb_create(src, key = "mtcars2", value = mtcars))
docdb_exists(src, "mtcars2")
(query <- list(cyl = list("$gt" = 6)))
docdb_query(src, "mtcars2", query = query)

# Elasticsearch
src <- src_elastic()
if (docdb_exists(src, "iris")) docdb_delete(src, "iris")
docdb_create(src, "iris", iris)
docdb_exists(src, "iris")
Sys.sleep(2)
docdb_query(src, "iris", query = "setosa")
docdb_query(src, "iris", query = "1.5")
docdb_query(src, "iris", query = "Petal.Width:1.5")

# Mongo
src <- src_mongo(collection = "mtcars")
if (docdb_exists(src, "mtcars")) docdb_delete(src, "mtcars")
docdb_create(src, "mtcars", mtcars)
docdb_query(src, "mtcars", query = '{"mpg":21}')
docdb_query(src, "mtcars", query = '{"mpg":21}', fields = '{"mpg":1, "cyl":1}')
docdb_get(src, "mtcars")

# SQLite
src <- src_sqlite()

# various query combinations:
docdb_create(src, "mtcars", mtcars)
docdb_query(src, "mtcars", query = '{"mpg":21}')
docdb_query(src, "mtcars", query = '{"mpg":21}', fields = '{"mpg":1, "cyl":1}')
docdb_query(src, "mtcars", query = '{"_id": {"$regex": "^.+0.*$"}}', fields = '{"gear": 1}')

# regular expressions except for [...] can be used to select fields:
docdb_create(src, "mapdata", value = data.frame(mapdata, stringsAsFactors = FALSE))
docdb_query(src, "mapdata", fields = '{"rows.elements.d.*text": 1}', query = '{}')
docdb_query(src, "mapdata", fields = '{"rows.elements.\\\\S+.text": 1}', query = '{}')
docdb_query(src, "mapdata", fields = '{"rows.elements.*somevalue": 1}', query = '{}')

## End(Not run)
```

docdb_update *Update documents*

Description

Update documents

Usage

```
docdb_update(src, key, value, ...)
```

Arguments

src	source object, result of call to src
key	(character) A key (collection for MongoDB and RSQLite)
value	(data.frame) A single data.frame. For MongoDB and RSQLite, its first column identifies the documents to be updated by means of the name of the column and the value(s) in the respective row(s), see examples.
...	Ignored

Details

Only CouchDB and sqlite supported for now

Examples

```
## Not run:
# CouchDB
src <- src_couchdb()
docdb_create(src, "mtcars2", mtcars)
docdb_get(src, "mtcars2")

mtcars$letter <- sample(letters, NROW(mtcars), replace = TRUE)
invisible(docdb_update(src, "mtcars2", mtcars))
docdb_get(src, "mtcars2")

# MongoDB
src <- src_mongo(collection = "mtcars")
docdb_create(src, key = "mtcars", value = mtcars)
# - update of carb for each matching gear
value <- data.frame("gear" = c(4, 5),
                    "carb" = c(8.1, 7.9),
                    stringsAsFactors = FALSE)
docdb_update(src, "mtcars", value)
# - update of gear where _id / oid is "2"
value <- data.frame("_id" = "2",
                    "gear" = 9,
                    stringsAsFactors = FALSE,
```

```
                    check.names = FALSE)
docdb_update(src, "mtcars", value)
docdb_get(src, "mtcars")

# SQLite
src <- src_sqlite()
docdb_create(src, "mtcars", mtcars)
dfupd <- data.frame("cyl" = c(4, 6),
                    "gear" = c(88, 99),
                    stringsAsFactors = FALSE)
(docdb_update(src, "mtcars", dfupd))
docdb_query(src, "mtcars",
            query = '{"gear": {"$gte": 88}}',
            fields = '{"gear": 1, "cyl": 1}')
dfupd <- data.frame("cyl" = c(8, 6),
                    "somejson" = c('{"gear": 77, "carb": 55}',
                                   '{"gear": 66, "newvar": 55}'),
                    stringsAsFactors = FALSE)
(docdb_update(src, "mtcars", dfupd))
docdb_query(src, "mtcars",
            query = '{"gear": {"$eq": 66}}',
            fields = '{"gear": 1, "cyl": 1, "carb": 1, "newvar": 1}')

## End(Not run)
```

`mapdata` *mapdata*

Description

mapdata

Usage

```
mapdata
```

Format

A json string with ragged, nested map

`nodbi-defunct` *Defunct functions in nodbi*

Description

- src_etcd: etcd removed, as long as S3 methods for all docdb_* functions

src *Setup database connections*

Description

Setup database connections

Details

There is a src_*() function to setup a connection to each of the database backends. Each has their own unique set of parameters.

- MongoDB - `src_mongo()`
- CouchDB - `src_couchdb()`
- Elasticsearch - `src_elastic()`
- Redis - `src_redis()`
- SQLite - `src_sqlite()`

Documentation details for each database:

- MongoDB - https://docs.mongodb.com/
- CouchDB - http://docs.couchdb.org/
- Elasticsearch - https://www.elastic.co/guide/en/elasticsearch/reference/current/index.html
- Redis - https://redis.io/documentation
- SQLite/json1 - https://www.sqlite.org/json1.html

src_couchdb *Setup a CouchDB database connection*

Description

Setup a CouchDB database connection

Usage

```
src_couchdb(
  host = "127.0.0.1",
  port = 5984,
  path = NULL,
  transport = "http",
  user = NULL,
  pwd = NULL,
  headers = NULL
)
```

Arguments

host	(character) host value, default: 127.0.0.1
port	(integer/numeric) Port. Remember that if you don't want a port set, set this parameter to NULL. Default: 5984
path	(character) context path that is appended to the end of the url. e.g., bar in http://foo.com/bar. Default: NULL, ignored
transport	(character) http or https. Default: http
user	(character) Username, if any
pwd	(character) Password, if any
headers	(list) list of named headers

Details

uses **sofa** under the hood; uses sofa::Cushion for connecting

Examples

```
## Not run:
src_couchdb()

## End(Not run)
```

---

src_elastic *Setup an Elasticsearch database connection*

Description

Setup an Elasticsearch database connection

Usage

```
src_elastic(
  host = "127.0.0.1",
  port = 9200,
  path = NULL,
  transport_schema = "http",
  user = NULL,
  pwd = NULL,
  force = FALSE,
  ...
)
```

Arguments

host	(character) the base url, defaults to localhost (http://127.0.0.1)
port	(character) port to connect to, defaults to 9200 (optional)
path	(character) context path that is appended to the end of the url. Default: NULL, ignored
transport_schema	(character) http or https. Default: http
user	(character) User name, if required for the connection. You can specify, but ignored for now.
pwd	(character) Password, if required for the connection. You can specify, but ignored for now.
force	(logical) Force re-load of connection details
...	Further args passed on to elastic::connect()

Details

uses **elastic** under the hood; uses elastic::connect() for connecting

Examples

```
## Not run:
src_elastic()

## End(Not run)
```

---

src_mongo *Setup a MongoDB database connection*

Description

Setup a MongoDB database connection

Usage

```
src_mongo(collection = "test", db = "test", url = "mongodb://localhost", ...)
```

Arguments

collection	(character) name of collection
db	(character) name of database
url	(character) address of the MongoDB server in mongo connection string URI format, see to mongolite::mongo
...	additional named params passed on to mongolite::mongo

Details

uses **monoglite** under the hood; uses mongolite::mongo for connecting

Examples

```
## Not run:
con <- src_mongo()
print(con)

## End(Not run)
```

`src_redis` *Setup an Redis database connection*

Description

Setup an Redis database connection

Usage

```
src_redis(...)
```

Arguments

`...`	Redis connection configuration options. See redux::redis_config for more information

Details

uses **redux** under the hood; uses `redux::hiredis()` for connecting

Examples

```
## Not run:
(con <- src_redis())
class(con)

## End(Not run)
```

`src_sqlite` *Setup a RSQLite database connection*

Description

Setup a RSQLite database connection

Usage

```
src_sqlite(dbname = ":memory:", ...)
```

Arguments

`dbname`	(character) name of database file, defaults to ":memory:" for an in-memory database, see RSQLite::SQLite
`...`	additional named parameters passed on to RSQLite::SQLite

Details

uses **RSQLite** under the hood

Examples

```
## Not run:
con <- src_sqlite()
print(con)

## End(Not run)
```

Index