

Package ‘nwisnfie’

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Type Package

Title Facilitates data harvest from USGS National Water Information System and subsequent publication of data in NetCDF format.

Version 0.1

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Description Facilitates data harvest from USGS National Water Information System and subsequent publication of data in NetCDF format.

License GPL (>= 2)

Suggests testthat

Imports

RPostgreSQL, ncdf4, dataRetrieval, yaml, foreach, doParallel, plyr, RCurl, XML, pryr, reshape2

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nwisnfie-package	<i>National Water Information System - National Flood Interoperability Experiment</i>
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Description

Facilitates data harvest from USGS National Water Information System and subsequent publication of data in NetCDF format.

Details

Package:	nwisnfie
Type:	Package
Version:	0.1
Date:	2015-01-05
License:	GPL (>= 2)

Author(s)

Kevin M. Smith (<https://github.com/Kevin-M-Smith>)

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References

NWIS:	http://waterdata.usgs.gov/nwis
NetCDF:	http://www.unidata.ucar.edu/software/netcdf/

AssignLogFileToConfig *Adds a log file to a config object.*

Description

Adds a log file to a config object.

Usage

```
AssignLogFileToConfig(file, config)
```

Arguments

config Configuration object created by LoadConfiguration.

See Also

To build a config object, see [LoadConfiguration](#).

Examples

```
## Not run:
library(nwisnfie)
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")
config <- AssignLogFileToConfig(file = "~/nwisnfie/logs/myLog.log", config = config)

## End(Not run)
```

Autovacuum

Manage Autovacuum Settings

Description

Functions used to enable and disable autovacuum on the data table

Usage

EnableAutoVacuum(conn, config)

DisableAutovacuum(config)

Arguments

config Configuration object created by LoadConfiguration.

Details

EnableAutovacuum enables autovacuum on the data table specified in config. DisableAutovacuum disables autovacuum on the data table specified in config.

See Also

To build a config object, see [LoadConfiguration](#).

Configuration File	<i>Configuration File</i>
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Description

This package uses a configuration file to manage basic operational details. It is written in YAML syntax.

References

For the most up-to-date standard file template, see https://github.com/Kevin-M-Smith/nwisnfie/blob/master/inst/etc/nwisnfie/global_config.yaml.

For information on the YAML specification, see <http://www.yaml.org/spec/1.2/spec.html>.

DBConnections	<i>Manage Database Connections</i>
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Description

Functions used to start and stop database connections.

Usage

```
StartDBConnection(config)
```

```
StopDBConnection(conn, config)
```

```
TestDBConnection(config)
```

Arguments

config	Configuration object created by LoadConfiguration.
conn	A RPostgreSQL connection object.

Details

StartDBConnection starts a database connection specified by config. StopDBConnection closes out the database connection contained in the conn object. TestDBConnection attempts to start and stop a database connection based on config.

Value

For StartDBConnection, a RPostgreSQL connection object.

See Also

To build a config object, see [LoadConfiguration](#).

Examples

```
## Not run:  
# Start and End Database Connection  
library(nwisnfie)  
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")  
conn <- StartDBConnection(config)  
StopDBConnection(conn)  
# or equivalently:  
TestDBConnection(config)  
  
## End(Not run)
```

DynamicTables

Manage dynamic tables.

Description

The following tables are considered 'dynamic':

1. data
2. staging

Usage

BuildDynamicTables(config)

DropDynamicTables(config)

RebuildDynamicTables(config)

Arguments

config A configuration object created by LoadConfiguration

See Also

To build a config object, see [LoadConfiguration](#).

Examples

```
## Not run:
library(nwisnfie)
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")
BuildDynamicTables(config)
DropDynamicTables(config)
# Equivalently...
RebuildDynamicTables(config)

## End(Not run)
```

InstallFiles	<i>Installs scripts and configuration files to the specified directory.</i>
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Description

If the directory does not exist, one will be created. An error will be thrown if previous installation exists in the directory, unless `overwrite == TRUE`.

Usage

```
InstallFiles(installDirectory, overwrite = FALSE)
```

Arguments

installDirectory	Directory to to
overwrite	Overwrite previously installed files?

LoadConfiguration	<i>Parses configuration file and returns a config object.</i>
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Description

Parses configuration file and returns a config object.

Usage

```
LoadConfiguration(configFile = "global_config.yaml")
```

Arguments

configFile	Character vector describing path to configuration file in YAML format.
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Value

Configuration object used by many functions in the `nwisnfie` package.

See Also

For proper formatting of the configuration file, see [Configuration File](#).

Examples

```
## Not run:  
# Load Configuration File and Start Database Connection  
library(nwisnfie)  
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")  
conn <- StartDBConnection(config)  
  
## End(Not run)
```

Parallelization

Cluster Management

Description

Functions for cleanly starting and stopping PSOCK clusters. These clusters are used by `nwisnfie` to perform embarrassingly parallel tasks in tandem. PSOCK clusters are used for maximum compatibility across platforms.

Usage

```
StartCluster(config)
```

```
StopCluster(cluster, config)
```

```
TestClusterSettings(config)
```

Arguments

<code>config</code>	Configuration object created by <code>LoadConfiguration</code>
<code>cluster</code>	A cluster reference produced by <code>StartCluster</code>

Details

`StartCluster` starts up the cluster, loads the `nwisnfie` library, and starts individual database connections. `StopCluster` closes out all database connections, and destroys the cluster. `TestClusterSettings` runs `StartCluster` and `StopCluster` in succession.

Value

`StartCluster` returns an object of class `c("SOCKcluster", "cluster")`, as built by `parallel::makePSOCKcluster`.

See Also

To build a config object, see [LoadConfiguration](#).

Examples

```
## Not run:
library(nwisnfie)
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")
cluster <- StartCluster(config)
StopCluster(cluster = cluster, config = config)
# or equivalently:
TestClusterSettings(config)

## End(Not run)
```

RunDBDiagnostics	<i>Run Diagnostistics on Database</i>
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Description

The following tests are currently run:

1. Load Database Connection
2. Check if required tables exist.

Usage

```
RunDBDiagnostics(config)
```

Arguments

config A configuration object created by LoadConfiguration

See Also

To build a config object, see [LoadConfiguration](#).

RunQuery	<i>Runs specified query.</i>
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Description

Runs specified query.

Usage

```
RunQuery(conn, query, config)
```


Arguments

- conn A RPostgreSQL connection object.
- query A character vector of a PostgreSQL query.

Value

Result of query.

See Also

To build a conn object, see [StartDBConnection](#).

Examples

```
## Not run:
library(nwisnfie)
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")
conn <- StartDBConnection(config)
result <- RunQuery(conn, "select * from data limit 1;")
print(result)
EndDBConnection(conn)

## End(Not run)
```

StaticTables	<i>Manage static tables.</i>
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Description

The following tables are considered 'static':

1. param.codes
2. site.metadata
3. param.metadata
4. active.sites
5. site.assets

Usage

```
PopulateStaticTables(config)

DropStaticTables(config)

WhichStaticTablesExist(config)

RepopulateStaticTables(config)
```

Arguments

config A configuration object created by LoadConfiguration

See Also

To build a config object, see [LoadConfiguration](#).

Examples

```
## Not run:
library(nwisnfie)
config <- LoadConfiguration("~/nwisnfie/global_config.yaml")
PopulateStaticTables(config)
DropStaticTables(config)
# Equivalently...
RepopulateStaticTables(config)

## End(Not run)
```

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