

Package: gfer (via r-universe)

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Type Package

Title Green Finance and Environmental Risk

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Description Focuses on data collecting, analyzing and visualization in green finance and environmental risk research and analysis. Main function includes environmental data collecting from official websites such as MEP (Ministry of Environmental Protection of China, <<https://www.mee.gov.cn>>), water related projects identification and environmental data visualization.

Encoding UTF-8

License GPL-2

LazyData true

Imports rvest, xml2, jsonlite, httr, stringi, V8, data.table, tidyr, scatterpie, ggplot2, ggrepel, circlize, googlesheets4, gsheets

Depends R (>= 2.10)

RoxygenNote 7.1.2

URL <https://yuanchao-xu.github.io/gfer/>

BugReports <https://github.com/Yuanchao-Xu/gfer/issues>

Suggests knitr, rmarkdown

VignetteBuilder knitr

Repository <https://yuanchao-xu.r-universe.dev>

RemoteUrl <https://github.com/yuanchao-xu/gfer>

RemoteRef HEAD

RemoteSha 0c5b0b356adcf61e92ce8db346d42272f894a778

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checkHttpStatus *private function for check the http status*

Description

private function for check the http status

Usage

```
checkHttpStatus(ret)
```

Arguments

ret the response obj returned by httr package

Value

return nothing , but if it finds some error , it stop the script

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1.
<https://CRAN.R-project.org/package=rstatscn>

cm *Matrix showing complicated management of China's Water Resource*

Description

Matrix showing complicated management of China's Water Resource

Usage

```
cm
```

Format

A data frame with 13 rows and 11 variables:

...

| | |
|-------------|--|
| dataJson2df | <i>private function to convert the returned json data to a dataframe</i> |
|-------------|--|

Description

private function to convert the returned json data to a dataframe

Usage

```
dataJson2df(rawObj, rowcode, colcode)
```

Arguments

| | |
|---------|---------------------------|
| rawObj | the fromJSON output |
| rowcode | rowcode in the data frame |
| colcode | colcode in the data frame |

Value

the constructed data frame

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1. <https://CRAN.R-project.org/package=rstatscn>

| | |
|--------|---|
| GDPmix | <i>Table about GDP mix of China provinces in 2015</i> |
|--------|---|

Description

Table about GDP mix of China provinces in 2015

Usage

```
GDPmix
```

Format

A data frame with 11 rows and 7 variables:

...

| | |
|----------|--|
| genDfwds | <i>private function for constructing the query parameter for dfwds</i> |
|----------|--|

Description

private function for constructing the query parameter for dfwds

Usage

```
genDfwds(wdcode, valuecode)
```

Arguments

| | |
|-----------|--|
| wdcode | string value , one of c("zb","sj","reg") |
| valuecode | string value , following is the table for available valuecode zb: the valudecode can be gotten by statscnQueryZb() function sj: the valudecode can be "2014" for nd db, "2014C" for jd db. reg: the valudecode is the region code fetched by statscnRegions(dbcode) function |

Value

return the queyr string for the http request

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1. <https://CRAN.R-project.org/package=rstatscn>

| | |
|--------------|--------------------------------------|
| getCSRRating | <i>get CSR rating from a website</i> |
|--------------|--------------------------------------|

Description

get CSR rating from a website

Usage

```
getCSRRating(startPage, endPage, year = 2015, proxy = FALSE)
```

Arguments

| | |
|-----------|---|
| startPage | on Which page you want to start, default is 1 |
| endPage | On which page you want to stop scrapping |
| year | In which year you want the rank |
| proxy | whether use the proxy, default is FALSE |

Details

Get CSR ratings and reports of different companies from <http://stockdata.stock.hexun.com/zrbg/>

Value

A table of CSR ratings collected from your input page

References

www.hexun.com

Examples

```
## Not run:
# get first two pages of CSR ratings in 2015
getCSRRating(1,3)

## End(Not run)
```

getCSRRating_unit *get CSR rating from a website for a unit page*

Description

get CSR rating from a website for a unit page

Usage

```
getCSRRating_unit(page, date, proxy = NULL)
```

Arguments

| | |
|-------|---|
| page | on Which page you want to scrap |
| date | represents the date is until which date, usually it's the last day of a year e.g., "2015-12-31" for the date of year 2015, "2014-12-31" for the date of year 2014 |
| proxy | whether use the proxy, default is FALSE |

Details

Get CSR ratings and reports of different companies from <http://stockdata.stock.hexun.com/zrbg/>

Value

A table of CSR ratings collected from your input page

References

www.hexun.com

getENNames *get a company's EN names*

Description

get a company's EN names

Usage

```
getENNames(tickers)
```

Arguments

tickers ticker/sympol of a company, TICKERS MUST BE CHARACTERS, '006027'
INSTEAD OF '6027'

Details

Data comes from hexun.com

Value

A data table with companies' EN names

References

<http://hexun.com>

Examples

```
## Not run:  
getENNames(601857)  
  
## End(Not run)
```

getENNames_unit *get a company's English name*

Description

get a company's English name

Usage

```
getENNames_unit(ticker)
```

Arguments

ticker ticker/sympol of a company, MUST BE A CHARACTER, '006027' INSTEAD OF '6027'

Details

Data comes from hexun.com

Value

A data table with companies' EN names

References

<http://hexun.com>

getExchange *get a company's listed location*

Description

get a company's listed location

Usage

```
getExchange(tickers)
```

Arguments

tickers ticker/sympol of a company, TICKERS MUST BE CHARACTERS, '006027' INSTEAD OF '6027'

Details

Data comes from www.finance.sina.com.cn

Value

A data table with a listed companies' ticker, security name and listed exchange location

References

www.finance.sina.com.cn

Examples

```
## Not run:  
getExchange('600601')  
getExchange(c('00005', '00001'))  
  
## End(Not run)
```

| | |
|--------------|---|
| getHisMktCap | <i>get a company's historical market cap, data comes from NetEase</i> |
|--------------|---|

Description

get a company's historical market cap, data comes from NetEase

Usage

```
getHisMktCap(tickers, date1, date2)
```

Arguments

- tickers ticker/sympol of a company, TICKERS MUST BE CHARACTERS, '006027' INSTEAD OF '6027'
- date1 starting date, in the following format "20160101", means Jan 1st of 2016
- date2 ending date, in the following format "20160101", if you only want one day's data, just set starting date and ending date the same day

Details

The input date interval should have at least one work day Data comes from www.money.163.com

Value

A data table with companies total capitalization and market capitalization

References

www.money.163.com

Examples

```
## Not run:  
getHisMktCap(601857, '20161202', '20161203')  
  
## End(Not run)
```

| | |
|-------------------|---|
| getHisMktCap_unit | <i>get a company's historical market cap, data comes from NetEase</i> |
|-------------------|---|

Description

get a company's historical market cap, data comes from NetEase

Usage

```
getHisMktCap_unit(ticker, date1, date2)
```

Arguments

| | |
|--------|---|
| ticker | ticker/symbol of a company, MUST BE A CHARACTER, '006027' INSTEAD OF '6027' |
| date1 | starting date, in the following format "20160101", means Jan 1st of 2016 |
| date2 | ending date, in the following format "20160101", if you only want one day's data, just set starting date and ending date the same day |

Details

Data comes from www.money.163.com

Value

A data table with companies total capitalization and market capitalization

References

www.money.163.com

| | |
|----------|--|
| getIndex | <i>get a company's market cap, data comes from NetEase</i> |
|----------|--|

Description

get a company's market cap, data comes from NetEase

Usage

```
getIndex(tickers, indexData)
```

Arguments

| | |
|-----------|--|
| tickers | ticker/symbol of a company, MUST BE A CHARACTER, e.g., input "006600" instead of 006600 The tickers have to be FULL AND EXACT, e.g., for Shanghai exchange and Shenzhen exchange, the input must have 6 digits, and for HK exchange, it must have 5 digits. the '0' in the beginning cannot be left out. |
| indexData | the index information, before running getIndex, indexData needs to be loaded using getIndexData |

Details

Data comes from www.finance.sina.com.cn and www.etnet.com.hk

Value

A data table with companies and which index they are included

References

www.finance.sina.com.cn www.etnet.com.hk

Examples

```
## Not run:  
indexData <- getIndexData()  
getIndex(600601, indexData)  
  
## End(Not run)
```

| | |
|-----------------|--|
| getIndexConstnt | <i>get a company's market cap, data comes from NetEase</i> |
|-----------------|--|

Description

get a company's market cap, data comes from NetEase

Usage

```
getIndexConstnt(indexPool)
```

Arguments

| | |
|-----------|--|
| indexPool | a pool of different index, special format for gfer |
|-----------|--|

Value

A data table with companies total capitalization and market capitalization

| | |
|--------------|--|
| getIndexData | <i>get index information Currently include CSI 100, SSE 50, CSI 300, SSE Central SOEs 50, HSI, HSCEI</i> |
|--------------|--|

Description

get index information Currently include CSI 100, SSE 50, CSI 300, SSE Central SOEs 50, HSI, HSCEI

Usage

```
getIndexData()
```

Value

a data table containing index information

| | |
|--------|---------------|
| getNBS | <i>getNBS</i> |
|--------|---------------|

Description

get National Bureau of Statistics data

Usage

```
getNBS(indicator, start, end)
```

Arguments

| | |
|-----------|---|
| indicator | of which data is fetched, indicator includes 'GDP', 'water resources', 'water use' and 'wastewater', etc. |
| start | starting year of data wanted |
| end | end year of data wanted, make sure your input end year exists in the NBS website |

Value

no return

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1. <https://CRAN.R-project.org/package=rstatscn>

| | |
|------------|--|
| getPPPList | <i>get PPP list from an official website</i> |
|------------|--|

Description

get PPP list from an official website

Usage

```
getPPPList(startPage = 1, endPage, proxy = FALSE)
```

Arguments

| | |
|-----------|---|
| startPage | on Which page you want to start, default is 1 |
| endPage | On which page you want to stop scrapping |
| proxy | whether proxy will be used, default is FALSE |

Details

Get PPP list from the Ministry of Finance of China (<http://www.cpppc.org:8082/efmisweb/ppp/projectLibrary/toPPPList.do?>) to view the listed projects in the PPP library.

Value

A table of PPP projects collected from your input page

References

www.cpppc.org

Examples

```
## Not run:
#scrape the first two pages
getPPPList(1,3)

## End(Not run)
```

| | |
|-----------------|--|
| getPPPList_unit | <i>get PPP list from a single page</i> |
|-----------------|--|

Description

get PPP list from a single page

Usage

```
getPPPList_unit(page, proxy = NULL)
```

Arguments

| | |
|-------|--|
| page | The page number |
| proxy | if you want to use a proxy to avoid blocking, you can input a proxy, otherwise leave it blank. |

Value

A table of PPP projects collected from your input page

| | |
|----------|--|
| getProxy | <i>Get proxy pool from free proxy provider</i> |
|----------|--|

Description

Get proxy pool from free proxy provider

Usage

```
getProxy()
```

Details

Extract proxies from <http://www.free-proxy-list.net/>, in case of the risk of being blocked by the scrapped website

Value

The sum of x and y.

References

www.free-proxy-list.net

| | |
|--------------|---|
| getStockList | <i>Get information from Shanghai Exchange and Shenzhen Exchange. This will only get stock information in Shanghai Exchange and Shenzhen Exchange Including stocker ticker, stock name and company full name. Data comes from China Merchants Bank</i> |
|--------------|---|

Description

Get information from Shanghai Exchange and Shenzhen Exchange. This will only get stock information in Shanghai Exchange and Shenzhen Exchange Including stocker ticker, stock name and company full name. Data comes from China Merchants Bank

Usage

```
getStockList()
```

References

<http://info.cmbchina.com/Stock/Single/>

| | |
|------------|--|
| getTickers | <i>get ticker by input a company's full name or a list of companies' full name</i> |
|------------|--|

Description

It can also be a way to test if a company is listed NOTE: If a company is listed in multiple exchange, then it needs double check, the programe only chooses ticker from random exchange

Usage

```
getTickers(corpNames)
```

Arguments

| | |
|-----------|---|
| corpNames | Full name of a company, should be full name |
|-----------|---|

Details

Data comes from www.cninfo.com.cn/

Value

A data table with companies stock name and stock ticker

References

www.cninfo.com.cn

| | |
|-----------------|--|
| getTickers_unit | <i>get ticker by input a company's full name</i> |
|-----------------|--|

Description

It can also be a way to test if a company is listed

Usage

```
getTickers_unit(corpName)
```

Arguments

| | |
|----------|------------------------|
| corpName | Full name of a company |
|----------|------------------------|

Details

Data comes from www.cninfo.com.cn/

Value

A data table with companies stock name and stock ticker

getWaternomicsData_goog
getWaternomicsData_goog

Description

Get NBS data from google sheet by shared link. Default link is provided by gfer, you can also create your own google sheet of GDP. NOTE: The 'link sharing on' of the sheet must be ticked in order to read

Usage

getWaternomicsData_goog()

getWaternomicsData_NBS
getWaternomicsData_NBS

Description

Get NBS data from NBS website.

Usage

getWaternomicsData_NBS(start, end)

Arguments

start starting year of data wanted
end end year of data wanted, make sure your input end year exists in the NBS website

getWaterQ_MEP_all *get PPP list from a single page*

Description

get PPP list from a single page

Usage

```
getWaterQ_MEP_all(year, week, station1, station2, proxy = FALSE)
```

Arguments

| | |
|----------|---|
| year | In which year you would like to scrape |
| week | In which week you would like to scrape, can be an array, like 3:5 |
| station1 | the start station index on the page |
| station2 | the end station index on the page |
| proxy | Whether to use proxy, default is FALSE |

Details

Get monitoring data of different stations from Ministry of Environmental Protection of China (<http://datacenter.mep.gov.cn/report/getCountGraph.do?type=runQianWater>). Using this function you will get data of all the stations. Since the number of stations vary with time, using this function, you have to make sure that within the period you are scrapping, the number of stations keep consistant.

References

<http://datacenter.mee.gov.cn/report/getCountGraph.do?type=runQianWater>

Examples

```
## Not run:  
# get data from 1st station to 5th station of the 3rd week of 2016  
a <- getWaterQ_MEP_all(2016, 3, 1, 5)
```

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

getWaterQ_MEP_all_unit
get PPP list from a single page

Description

get PPP list from a single page

Usage

getWaterQ_MEP_all_unit(year, week, station1, station2, proxy = NULL)

Arguments

| | |
|----------|--|
| year | In which year you would like to scrape |
| week | In which week you would like to scrape |
| station1 | the start station index on the page |
| station2 | the end station index on the page |
| proxy | if you want to use a proxy to avoid blocking, you can input a proxy, otherwise leave it blank. |

Value

A table of PPP projects collected from your input page

References

<http://datacenter.mee.gov.cn/report/getCountGraph.do?type=runQianWater>

is.listed *Check if a company is listed in Chinese stock market*

Description

Check if a company is listed in Chinese stock market

Usage

is.listed(corpList, stockList)

Arguments

| | |
|-----------|---|
| corpList | company list you want to check if listed, should be a dataframe |
| stockList | Result from getStockList |

References

<http://info.cmbchina.com/Stock/Single/>

| | |
|--------|---------------------------------|
| milSec | <i>private function for sec</i> |
|--------|---------------------------------|

Description

private function for sec

Usage

```
milSec()
```

Value

milsec

| | |
|-----------|-----------------------|
| plotChord | <i>plotScatterPie</i> |
|-----------|-----------------------|

Description

if 'Summation of cell padding on y-direction are larger than the height of the cells' appears, just enlarge the xlim or ylim accordingly

Usage

```
plotChord(  
  data,  
  t = FALSE,  
  ifsep = TRUE,  
  trans = 0.3,  
  highlight = NULL,  
  xlim = c(-1, 1),  
  ylim = c(-1, 1)  
)
```

Arguments

| | |
|-----------|--|
| data | a dataframe showing different management intersections. See the data frame in the example |
| t | is transpose the dataframe, by default, lines flow from row to column, if t == TRUE, lines will flow from columns to rows. Once transposed, |
| ifsep | if separate row and col categories in the chart, default is TRUE |
| trans | transparency of the chart's lines, default is 0.3 |
| highlight | a string or string array of highlighted items, MUST be selected from first column (which represents names) or colnames. if highlight has more than 2 items, they should belong to same category, either colnames, or names. One name and one column name is not allowed. |
| xlim | x limit of the chart, default is c(-1, 1) |
| ylim | y limte of the chart, default is c(-1, 1) |

Details

plot scatter pie chart for multidimension analysis, such as waternomics. This plot can provide information about water use/wastewater of each provinces and GDP mix of each provinces, see examples.

Examples

```
## Not run:
plotChord(cm)
plotChord(cm, t = T)
plotChord(cm, highlight = 'MEP')
plotChord(cm, highlight = 'Investment')

## End(Not run)
```

plotScatterPie

plotScatterPie

Description

plot scatter pie chart for multidimension analysis, such as waternomics. This plot can provide information about water use/wastewater of each provinces and GDP mix of each provinces, see examples.

Usage

```
plotScatterPie(
  data,
  pieRange,
  pieColor = NULL,
  xmeanLine = TRUE,
  ymeanLine = TRUE,
  label_on = TRUE,
  output = FALSE
)
```

Arguments

| | |
|------------------------|---|
| <code>data</code> | a dataframe with colnames x, y, r, label, these four names must be in colnames. |
| <code>pieRange</code> | define which column to which column to be presented by pie chart, see examples |
| <code>pieColor</code> | color for different colors in pie chart |
| <code>xmeanLine</code> | if plot x mean line |
| <code>ymeanLine</code> | if plot y mean line |
| <code>label_on</code> | Whether to show label |
| <code>output</code> | if you want an ggplot object as output, default is FALSE |

Examples

```
GDPColor_CWR <- c("#6B8033", "#020303", "#0D77B9")

data(GDPmix)

# in colnames(GDPmix), there must be x, y, r, label.
# but right now, GDPmix has x, y, r, but lacks a label column, let's assign label to province column
colnames(GDPmix)[1] <- 'label'

## Not run:
plotScatterPie(GDPmix, pieRange = 4:6, pieColor = GDPColor_CWR)

## End(Not run)
```

statscnDbs

the available dbs

Description

the available dbs in the national db

Usage

```
statscnDbs()
```

Value

a data frame with 2 columns , one is the dbcode, another is the db description

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1.
<https://CRAN.R-project.org/package=rstatscn>

Examples

```
## Not run:
statscnDbs()

## End(Not run)
```

| | |
|------------------|-------------------------------------|
| statscnQueryData | <i>query data in the statscn db</i> |
|------------------|-------------------------------------|

Description

the main function for querying the statscn database, it will retrieve the data from specified db and organize the data in a data frame.

Usage

```
statscnQueryData(
  zb = "A0201",
  dbcode = "hgnd",
  rowcode = "zb",
  colcode = "sj",
  moreWd = list(name = NA, value = NA)
)
```

Arguments

| | |
|---------|---|
| zb | the zb/category code to be queried |
| dbcode | the db code for querying |
| rowcode | rowcode in the returned data frame |
| colcode | colcode in the returned data frame |
| moreWd | more constraint on the data where the name should be one of c("reg","sj") , which stand for region and sj/time. the valuecode for reg should be the region code queried by statscnRegions() the valuecode for sj should be like '2014' for *nd , '2014C' for *jd , '201405' for *yd. Be noted that , the moreWd name should be different with either rowcode or colcode |

Value

the data frame you are quering

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1.
<https://CRAN.R-project.org/package=rstatscn>

Examples

```
## Not run:  
df <- statscnQueryData('A0201', dbcode = 'hgnd')  
df <- statscnQueryData('A0201', dbcode = 'fsnd', rowcode = 'zb', colcode = 'sj',  
                      moreWd = list(name = 'reg', value = '110000'))  
  
## End(Not run)
```

statscnQueryLastN *fetch the lastN data*

Description

fetch the lastN data for the latest query, only affect the number of rows in the returned data. This function can not be used alone , statscnQueryData() has to be called before this function

Usage

```
statscnQueryLastN(n)
```

Arguments

n the number of rows to be fetched

Value

the last n rows data in the latest query

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1.
<https://CRAN.R-project.org/package=rstatscn>

Examples

```
## Not run:  
df=statscnQueryData('A0201',dbcode='hgnd')  
df2=statscnQueryLastN(20)  
  
## End(Not run)
```

| | |
|----------------|----------------------------|
| statscnQueryZb | <i>the data categories</i> |
|----------------|----------------------------|

Description

the sub data categories for the zbid category, dbcode need to be specified, where the dbcode can be fetched by function statscnDbs(). In the returned data frame, the column 'isParent' shows if each sub category is leap category or not

Usage

```
statscnQueryZb(zbid = "zb", dbcode = "hgnd")
```

Arguments

| | |
|--------|---|
| zbid | the father zb/category id , the root id is 'zb' |
| dbcode | which db will be queried |

Value

the data frame with the sub zbs/categories , if the given zbid is not a Parent zb/category, null list is returned

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1.
<https://CRAN.R-project.org/package=rstatscn>

Examples

```
## Not run:  
statscnQueryZb()  
statscnQueryZb('A01',dbcode="hgnd")  
  
## End(Not run)
```

| | |
|----------------|--------------------------|
| statscnRegions | <i>the regions in db</i> |
|----------------|--------------------------|

Description

the available regions in the specified db, it is used for query the province, city and country code generally

Usage

```
statscnRegions(dbcode = "fsnd")
```

Arguments

dbcode the dbcode should be some province db(fs*) , city db(cs*) or international db(gj*)

Value

the data frame with all the available region codes and names in the db

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1. <https://CRAN.R-project.org/package=rstatscn>

Examples

```
## Not run:
statscnRegions('fsnd')
statscnRegions('csnd')
statscnRegions('gjnd')

## End(Not run)
```

| | |
|----------------------|-----------------------------|
| statscnRowNamePrefix | <i>statscnRowNamePrefix</i> |
|----------------------|-----------------------------|

Description

set the rowName prefix in the dataframe

Usage

```
statscnRowNamePrefix(p = "nrow")
```

Arguments

p , how to set the rowname prefix. it is 'nrow' by default , and it is the only supported value currently to unset the row name prefix, call this function with p=NULL

Details

in case you encounter the following error: Error in 'row.names<-.data.frame'(*tmp*, value = value): duplicate 'row.names' are not allowed you need to call this function

Value

no return

References

Xuehui YANG (2016). rstatscn: R Interface for China National Data. R package version 1.1.1. <https://CRAN.R-project.org/package=rstatscn>

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