SIE example with Counterfeit Banknotes and Coins series

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This is the example shared in the **Usage** section of the main introduction of this Repository.

Overview

To show the usage of the SIE API with `siebanxicor` R-package, we will go through an example using the time series for *Annual counterfeit domestic banknotes detected* (serie SM1255) and *Annual counterfeit domestic banknotes detected* (SM1266).

1. Load library

After the `siebanxicor` package is installed, load this library and also the tidyverse library.

```
library("siebanxicor")
library("tidyverse")
```

```
## -- Attaching packages ------------------------ tidyverse 1.3.0 --

## v ggplot2 3.3.2     v purrr   0.3.4
## v tibble  3.0.3     v dplyr   1.0.2
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.4.0     v forcats 0.5.0

## -- Conflicts --------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

2. Use `setToken(token)`

Bring your token and open the SIE API channel with the `setToken` utility function.

```
# bring the token
token_file <- read.csv("../token/SIE_Token.csv", header=FALSE)

# set the token
setToken(token_file$V2)
```

Notes:
- If you don't have a token to use SIE API, ***click here*** *to access the official website and obtain one.*
- I add a csv file where users should paste and save their token to run this example.

3. Get data with `getSeriesData(series, startDate, endDate)`

Get the time series of interest, in this case the **SM1255** and **SM1266** series of annual counterfeit of mexican banknotes and coins, using the `getSeriesData` function.

```
# setting the variables
my_series <- c("SM1255", "SM1266")
my_start <- '2010-01-01'
my_end <- Sys.Date() #looks for today's date

# getting the series
series <- getSeriesData(my_series, my_start, my_end)
```

...this is the vector we get as result:

```
## $SM1266
## $SM1266$date
##  [1] "2010-01-01" "2011-01-01" "2012-01-01" "2013-01-01" "2014-01-01"
##  [6] "2015-01-01" "2016-01-01" "2017-01-01" "2018-01-01" "2019-01-01"
##
## $SM1266$value
##  [1]  5065  3423  1532  2435  6352 12606  1308   976  1712  3009
##
##
## $SM1255
## $SM1255$date
##  [1] "2010-01-01" "2011-01-01" "2012-01-01" "2013-01-01" "2014-01-01"
##  [6] "2015-01-01" "2016-01-01" "2017-01-01" "2018-01-01" "2019-01-01"
##
## $SM1255$value
##  [1] 260419 316565 352625 332946 230530 264372 269099 301075 339655 302930
```

Note: to use the `getSeriesData` function, you should previously call `setToken`.

4. Get the metadata with `getSeriesMetadata(series, locale)`

This function returns the general information of series. To select the language of the metadata, set the *locale* variable as "en" for English, and "es" for Spanish.

```
# getting the metadata
getSeriesMetadata(my_series, locale="en")
```

```
##   idSerie
## 1  SM1266
## 2  SM1255
##                                                                                  title
## 1     Annual counterfeit coins detected per denomination (domestic coins), All denominations
## 2 Annual counterfeit notes detected per denomination (domestic banknotes), All denominations
##    startDate    endDate frequency dataType   unit
## 1 2006-01-01 2019-01-01    Annual    Flows Pieces
## 2 2006-01-01 2019-01-01    Annual    Flows Pieces
```

Note: to use the `getSeriesMetadata` function, you should previously call `setToken`.

5. Get a data frame of one series using `getSerieDataFrame(series, idSerie)`

This function will be helpful to get a data frame for the annual counterfeit of mexican banknotes **(SM1255)** series, from the vector returned by the `getSerieDataFrame` in the previous point #3.

```
# getting the series
df_SM1255 <- getSerieDataFrame(series, "SM1255")
```

... this is the data frame that we get as result:

```
##          date  value
## 1  2010-01-01 260419
## 2  2011-01-01 316565
## 3  2012-01-01 352625
## 4  2013-01-01 332946
## 5  2014-01-01 230530
## 6  2015-01-01 264372
## 7  2016-01-01 269099
## 8  2017-01-01 301075
## 9  2018-01-01 339655
## 10 2019-01-01 302930
```

Note: to use the `getSerieDataFrame` function, you should previously call `setToken` and `getSerieData`.

6. Get the last value of one or more series with `getSeriesCurrentValue(series)`

To get the last value of the series **SM1255** and **SM1266**, we will use the `getSeriesCurrentValue` function.

```
series_last <- getSeriesCurrentValue(my_series)
```

... this is the data frame taht we get as result after using `getSeriesData`:

```
series_last
```

```
##   idSerie       date  value
## 1  SM1255 2019-01-01 302930
## 2  SM1266 2019-01-01   3009
```

Note: to use the `getSeriesCurrentValue` function, you should previously call `setToken`.

7. Use the custome function `SIE_function(series_codes, series_names, title_plot, x_lab, y_lab, startDate, endDate, route)`

This function prints the metadata of the series, prints and save and their plot, and returns a data frame with the requested series in tidy format.

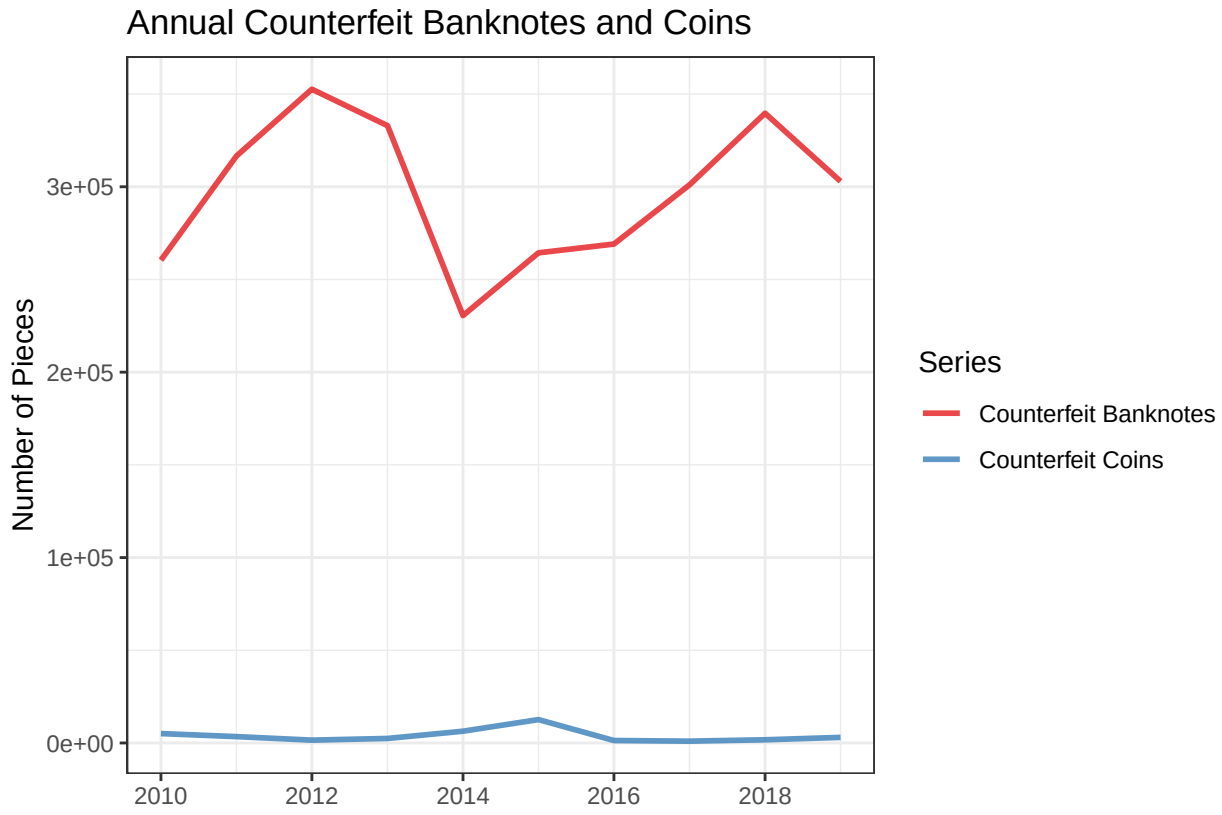
```
# call the customed function from an RScript
source("SIE_function.R")

# setting the variables
```

```r
my_series <- c("SM1255", "SM1266")
my_names <- c("Counterfeit Banknotes", "Counterfeit Coins")
my_title <- "Annual Counterfeit Banknotes and Coins"
my_start <- '2010-01-01'
my_end <- Sys.Date() #looks for today's date

# run the function
sie_function(my_series, my_names, my_title, route="../img/",
             y_lab="Number of Pieces", startDate=my_start)
```

```
## Saving 6.5 x 4.5 in image
```




```
##   idSerie
## 1  SM1255
## 2  SM1266
##                                                                                                  title
## 1 Annual counterfeit notes detected per denomination (domestic banknotes), All denominations
## 2     Annual counterfeit coins detected per denomination (domestic coins), All denominations
##    startDate    endDate frequency dataType   unit
## 1 2006-01-01 2019-01-01    Annual    Flows Pieces
## 2 2006-01-01 2019-01-01    Annual    Flows Pieces

##          date  value  serie            serie_name
## 1  2010-01-01 260419 SM1255 Counterfeit Banknotes
```

```
## 2  2011-01-01 316565 SM1255 Counterfeit Banknotes
## 3  2012-01-01 352625 SM1255 Counterfeit Banknotes
## 4  2013-01-01 332946 SM1255 Counterfeit Banknotes
## 5  2014-01-01 230530 SM1255 Counterfeit Banknotes
## 6  2015-01-01 264372 SM1255 Counterfeit Banknotes
## 7  2016-01-01 269099 SM1255 Counterfeit Banknotes
## 8  2017-01-01 301075 SM1255 Counterfeit Banknotes
## 9  2018-01-01 339655 SM1255 Counterfeit Banknotes
## 10 2019-01-01 302930 SM1255 Counterfeit Banknotes
## 11 2010-01-01   5065 SM1266     Counterfeit Coins
## 12 2011-01-01   3423 SM1266     Counterfeit Coins
## 13 2012-01-01   1532 SM1266     Counterfeit Coins
## 14 2013-01-01   2435 SM1266     Counterfeit Coins
## 15 2014-01-01   6352 SM1266     Counterfeit Coins
## 16 2015-01-01  12606 SM1266     Counterfeit Coins
## 17 2016-01-01   1308 SM1266     Counterfeit Coins
## 18 2017-01-01    976 SM1266     Counterfeit Coins
## 19 2018-01-01   1712 SM1266     Counterfeit Coins
## 20 2019-01-01   3009 SM1266     Counterfeit Coins
```