Worldbank API Access

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Introduction

A simple tool to access data from worldbank open api url in MATLAB environment.

See more details about the developer informations.

Special notice: Non-commerial use.

Requirements

- support `jsondecode` built-in function
- support `matlab.net.*` package

Method Lists

Basic Methods

- `isconnection` - check the connection
- `close` - delete the connection object
- `importdataset` - import/repair the datasets automatically
- `completion` - a method used for tab completion

Advanced Data API Queries Methods

- `getSources` - Source Queries
- `getConcepts` - Concepts Queries
- `getConceptVariables` - Concept Variables Queries
- `query` - Advanced Data Queries

Aggregate API Queries Methods

- `aggregate` - Aggregate API Queries

Country API Queries Methods

- `country` - Country API Queries

Indicator API Queries Methods

- `indicator` - Indicator API Queries

API Basic Call Structures

- `header` - create query structs
- `send` - retrieve data

Topic API Queries Methods

- `topic` - topic api queries

GettingStarted

create a `wb` connection object.

```
conn = wb()
```

```
conn =
  wb with properties:

     url: 'http://www.worldbank.org'
    root: 'D:\Program Files\MATLAB\Documents\WorldBank API Access\@wb'
```

generate a request struct.

```
request = header(conn, 'country','all',...
    'indicator','SP.POP.TOTL',...
    'date','2000');
```

send the request struct to get data

```
population_data = send(conn,request)
```

```
population_data = 2×1 cell array
    {  1×1 struct}
    {264×1 struct}
```

Advanced API Queries

```
population_data_adv = query(conn,'source','40',...
```

```
    'time','YR2000',...
    'country','all',...
    'series','SP.POP.TOTL')
```

```
population_data_adv = struct with fields:
           page: 1
          pages: 1
       per_page: 9999
          total: 259
    lastupdated: '2018-09-20'
         source: [1×1 struct]
```

check the connection

```
X = isconnection(conn)
```

```
X = logical
   1
```

close the connection

```
close(conn);
```

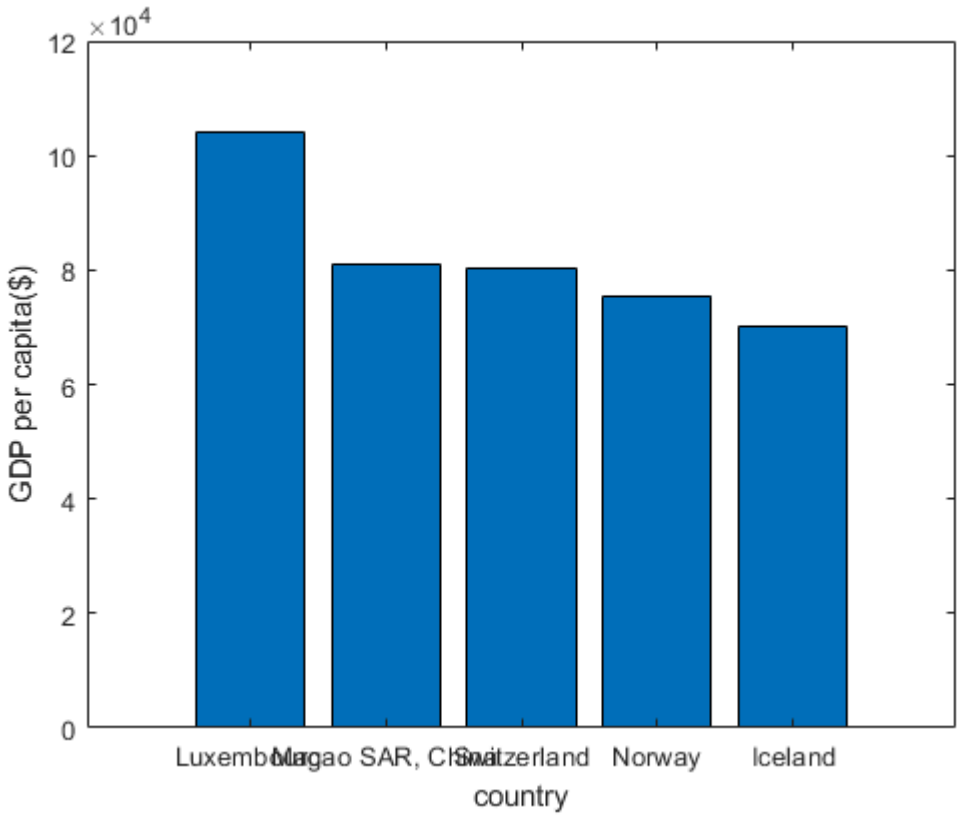
Demo

1. Display the first five GDP per capita countries.
2. Comparing stock market yields among different countries.

Display the first five GDP per capita countries.

```
% make a connection to wb api.
c = wb();

% fetch gdp per capita data.
gdp_data = query(c,'source','2',...
    'series','NY.GDP.PCAP.CD',...
    'country','all',...
    'time','YR2017');

% parse the data
raw_data = {gdp_data.source.data.value};

% let loss data be NaNs
for n = 1:length(raw_data)
    if isempty(raw_data{n})
        raw_data{n} = NaN;
    end
end

% rank data
raw_data = [raw_data{:}];
```

```
[top5,ranks] = maxk(raw_data,5);

% get the country labels
country = cell(1,5);
for n = 1:5
    country{n} = ...
        gdp_data.source.data(ranks(n)).variable(1).value;
end

% make a bar chart
bar(top5);
set(gca,'xticklabel',country);
xlabel('country');
ylabel('GDP per capita($)');
```

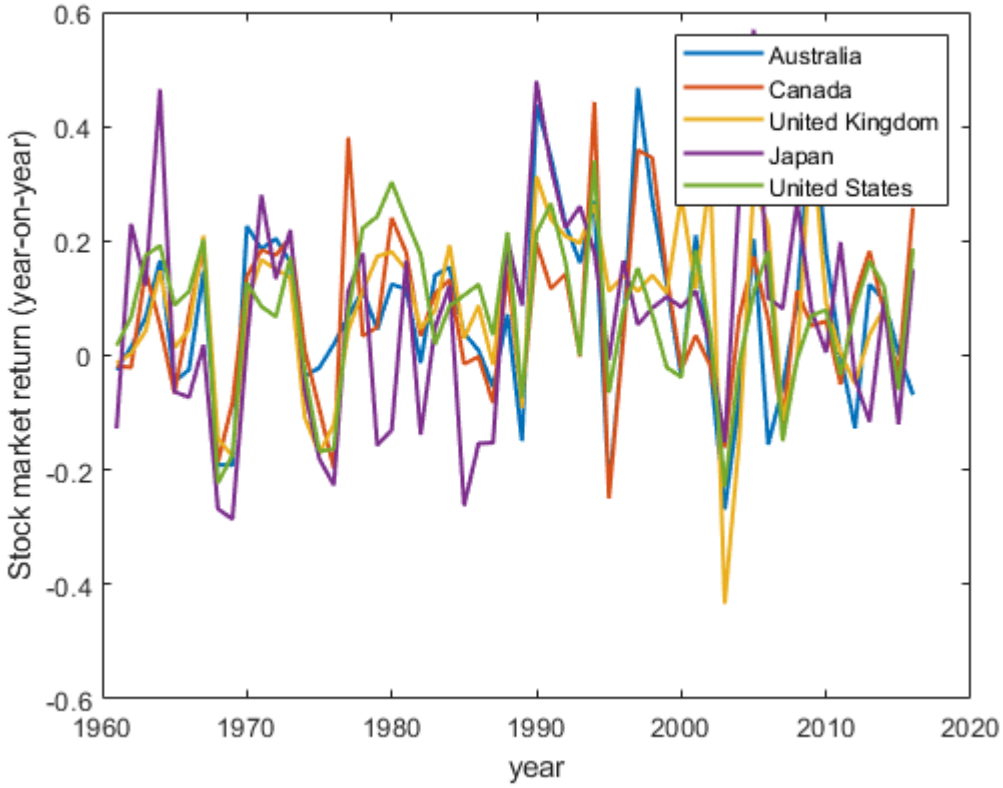



```
% close the connection
close(c);
```

Comparing stock market yields among different countries.

```
obj = wb();

% import the source table to recognize which source do "stock market
% yields" belong to.
[~,tbl] = completion(obj,'getSources');
```

```
% the 'Global Financial Development' source code is '32'
% import the concept table of source code '32'
[~,tbl_concept] = completion(obj,'getConcepts','32');

% get the concept variables of 'series' concept within '32'
[~,tbl_variables] = completion(obj,'getConceptVariables','32','series');

% we find the target indicator 'Stock market return (%, year-on-year)',
% whose id is 'GFDD.OM.02'.

% specify time range
% pass

% specify country set: high-income income country
% use 'aggregate' method
tbl_incomelevel = aggregate(obj,'incomelevel');

% we know that high-income code is 'hic'
country_high = obj.country('all','incomelevel','hic');
country_high = {country_high{2}.id}; % get the list of high-income

% query step
response = query(obj,'source','32',...
    'Series','GFDD.OM.02',...
    'Time','all',...
    'Country',country_high);

% number of country
for i = 1:length(response.source.data)
    c{i} = response.source.data(i).variable(1).value;
end
num = length(unique(c)); % num = 78

% parse data
str = unique(c,'stable');
data = {response.source.data.value};
data = reshape(data,length(data)/num, num);

x = data(:,[6,14,29,42,77]);
for i = 1:size(x,1)
    for j = 1:size(x,2)
        if isempty(x{i,j})
            x{i,j} = NaN;
        end
    end
end
legend_string = str([6,14,29,42,77]);

% plot data
plot(1960:2017,cell2mat(x)/100,'linewidth',1.5);
legend(legend_string);
xlabel('year');
ylabel('Stock market return (year-on-year)');
```




```
close(obj)
```

External Readings

1. **API documentation of WorldBank**
2. **The idea from datafeed toolbox**
3. **Learn something about HTTP interface technique**
4. **Try to make your own function signatures**
5. **How to manage your project by class folder**