Report for CS209A Java2 Project

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Introduction

Coronavirus disease 2019 (**COVID-19**) is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019.[1] The disease has since spread worldwide, leading to an ongoing pandemic.

Data visualization (often abbreviated **data viz**[2]) is an interdisciplinary field that deals with the graphic representation of data. It is a particularly efficient way of communicating when the data is numerous as for example a time series.[3]

In this project, we develop a program for date visualization of statistics from **COVID-19**.

Project file structure

In this project, we use Java FX as the front end. Here is the project structure:

```
├─src
│  └─main
│      ├─java
│      │  └─com
│      │      └─example
│      │          └─java2project
│      │              ├─Crawler
│      │              ├─data
│      │              └─File
│      └─resources
│          └─com
│              └─example
│                  └─java2project
└─target
    ├─classes
    │  └─com
    │      └─example
    │          └─java2project
    │              ├─Crawler
    │              └─data
    └─generated-sources
        └─annotations
```

Interpretation

The project can be mainly divided into two parts, data processing and data visualization.

Data processing implement the interface *DataManipulation*, with creating some useful class like *Database, Info, Downloader*.

Class *Database* is to read csv file and store all data in ram. Each piece of data is stored by class *Info*, which maintain a hashmap to obtain data. Class *Downloader* is to download the latest csv file from website.

There are several significant methods in *DataManipulation*, here are their description:

```
public String[] getDataSourceList();
```

This method is to obtain all data source we can access.

```
public List<Map<String, String>> getAllTableData()
```

This method is to get all data in the chosen data source.

```
public void updataDateByCrawler();
```

This method is to download the latest csv file from website.

```
public List<Map<String, String>> getSortResult(String keywords);
```

This method is to get sorted result.

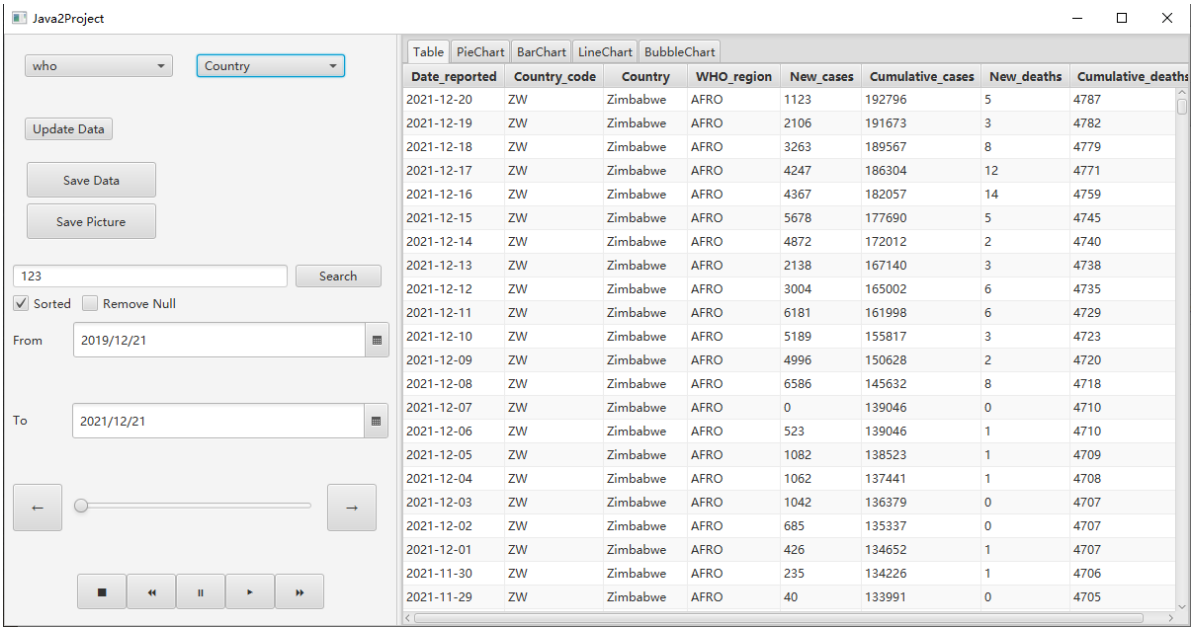
```
public List<Map<String, String>> getSearchResult(String keywords);
```

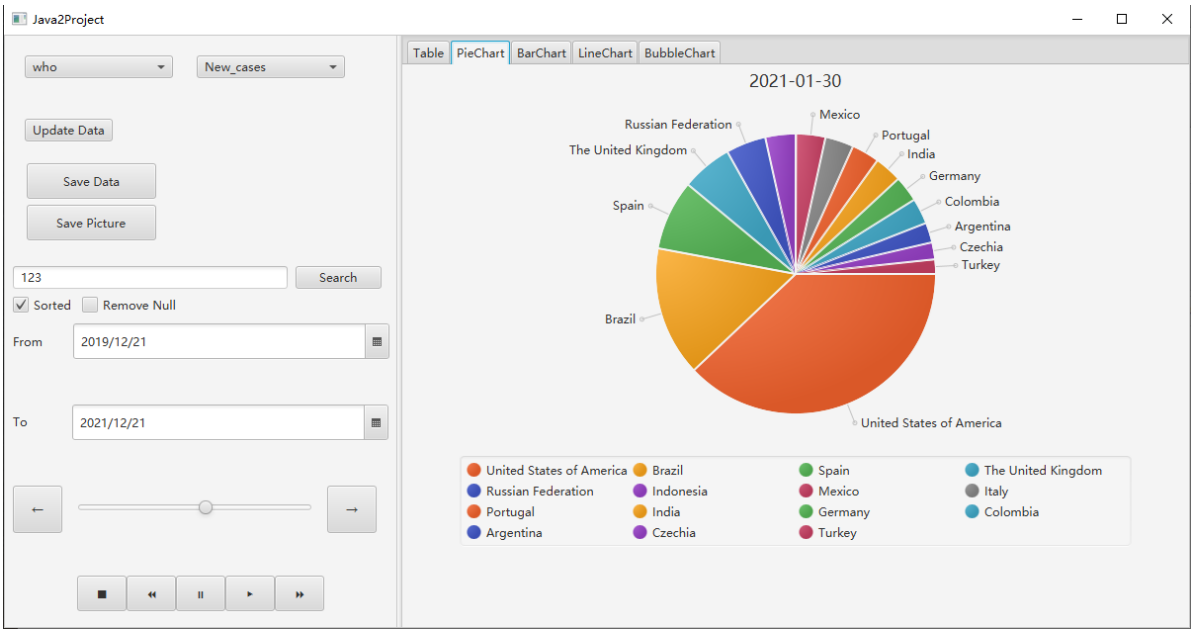
This method is to get search result.

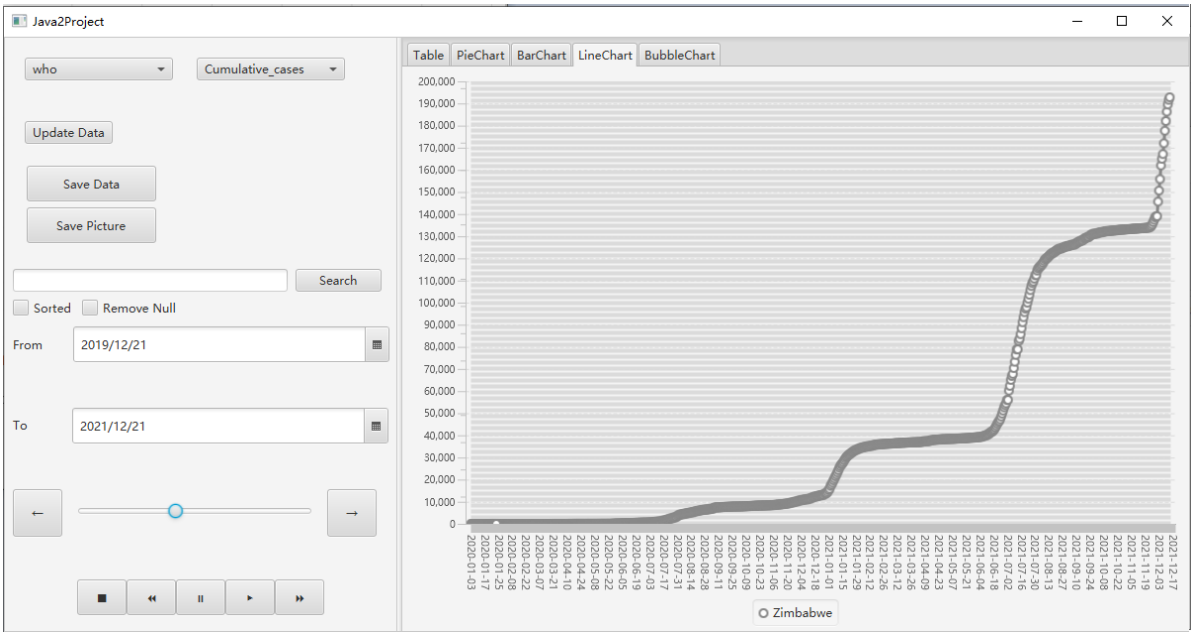
In data visualization part, we prepare one table and four dynamic charts. They will be present in **Demonstration** part.

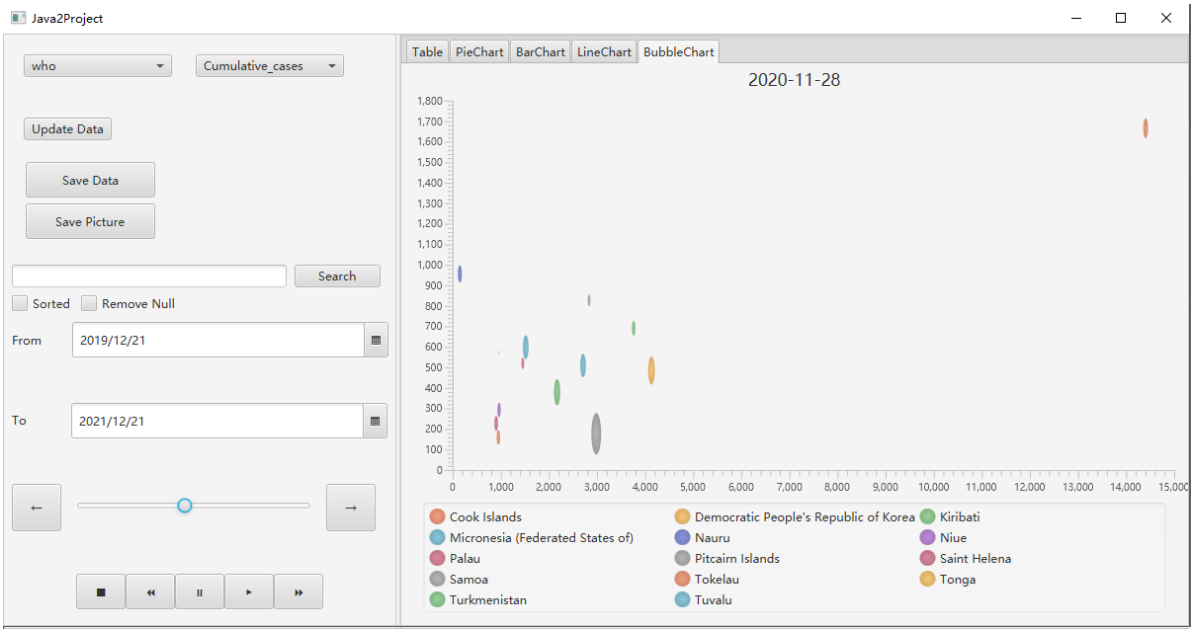
Demonstration

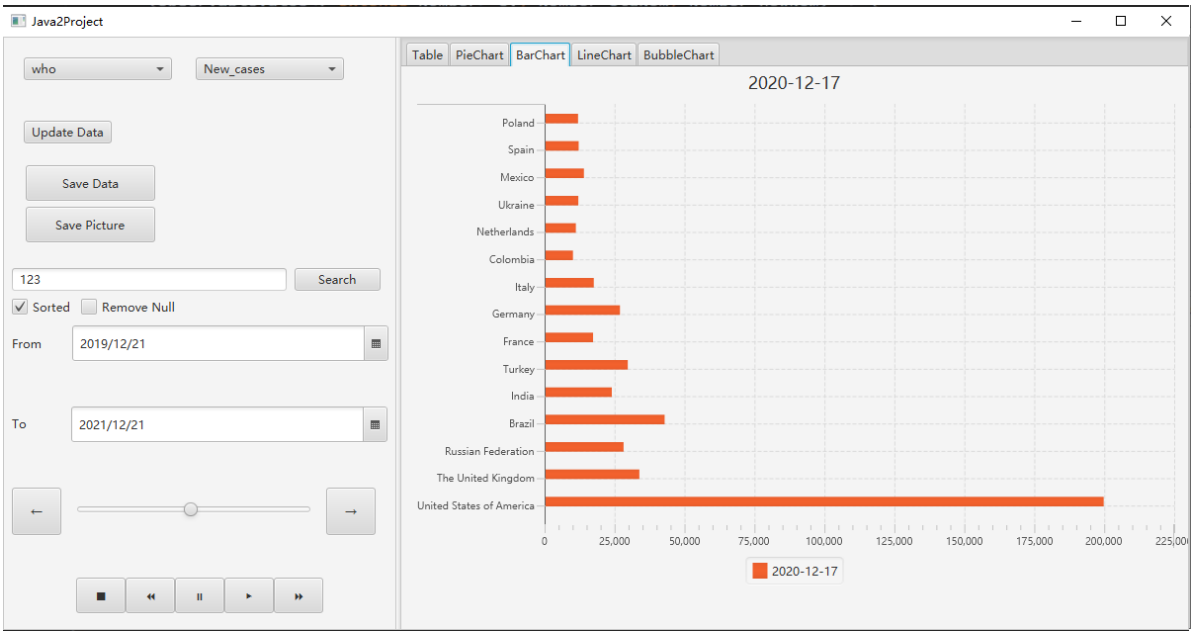
The table is to show all data in the csv file. The other four charts are use to show chosen data.


Java2Project
who
Country
Update Data
Save Data
Save Picture
123
Search
Sorted
Remove Null
From
2019/12/21
To
2021/12/21
Table
PieChart
BarChart
LineChart
BubbleChart
Date_reported Country_code Country WHO_region New_cases Cumulative_cases New_deaths Cumulative_deaths
2021-12-20 ZW Zimbabwe AFRO 1123 192796 5 4787
2021-12-19 ZW Zimbabwe AFRO 2106 191673 3 4782
2021-12-18 ZW Zimbabwe AFRO 3263 189567 8 4779
2021-12-17 ZW Zimbabwe AFRO 4247 186304 12 4771
2021-12-16 ZW Zimbabwe AFRO 4367 182057 14 4759
2021-12-15 ZW Zimbabwe AFRO 5678 177690 5 4745
2021-12-14 ZW Zimbabwe AFRO 4872 172012 2 4740
2021-12-13 ZW Zimbabwe AFRO 2138 167140 3 4738
2021-12-12 ZW Zimbabwe AFRO 3004 165002 6 4735
2021-12-11 ZW Zimbabwe AFRO 6181 161998 6 4729
2021-12-10 ZW Zimbabwe AFRO 5189 155817 3 4723
2021-12-09 ZW Zimbabwe AFRO 4996 150628 2 4720
2021-12-08 ZW Zimbabwe AFRO 6586 145632 8 4718
2021-12-07 ZW Zimbabwe AFRO 0 139046 0 4710
2021-12-06 ZW Zimbabwe AFRO 523 139046 1 4710
2021-12-05 ZW Zimbabwe AFRO 1082 138523 1 4709
2021-12-04 ZW Zimbabwe AFRO 1062 137441 1 4708
2021-12-03 ZW Zimbabwe AFRO 1042 136379 0 4707
2021-12-02 ZW Zimbabwe AFRO 685 135337 0 4707
2021-12-01 ZW Zimbabwe AFRO 426 134652 1 4707
2021-11-30 ZW Zimbabwe AFRO 235 134226 1 4706
2021-11-29 ZW Zimbabwe AFRO 40 133991 0 4705


Java2Project
who
New_cases
Update Data
Save Data
Save Picture
123
Search
Sorted
Remove Null
From
2019/12/21
To
2021/12/21
Table
PieChart
BarChart
LineChart
BubbleChart
2021-01-30
Russian Federation
Mexico
Portugal
The United Kingdom
India
Germany
Spain
Colombia
Argentina
Czechia
Turkey
Brazil
United States of America
United States of America
Brazil
Spain
The United Kingdom
Russian Federation
Indonesia
Mexico
Italy
Portugal
India
Germany
Colombia
Argentina
Czechia
Turkey


Java2Project
who
Cumulative_cases
Update Data
Save Data
Save Picture
Search
Sorted
Remove Null
From
2019/12/21
To
2021/12/21
Table
PieChart
BarChart
LineChart
BubbleChart
200,000
190,000
180,000
170,000
160,000
150,000
140,000
130,000
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Zimbabwe


Java2Project
who
Cumulative_cases
Update Data
Save Data
Save Picture
Search
Sorted
Remove Null
From
2019/12/21
To
2021/12/21
Table
PieChart
BarChart
LineChart
BubbleChart
2020-11-28
Cook Islands
Democratic People's Republic of Korea
Kiribati
Micronesia (Federated States of)
Nauru
Niue
Palau
Pitcairn Islands
Saint Helena
Samoa
Tokelau
Tonga
Turkmenistan
Tuvalu


Java2Project
who
New_cases
Update Data
Save Data
Save Picture
123
Search
Sorted
Remove Null
From
2019/12/21
To
2021/12/21
Table
PieChart
BarChart
LineChart
BubbleChart
2020-12-17
Poland
Spain
Mexico
Ukraine
Netherlands
Colombia
Italy
Germany
France
Turkey
India
Brazil
Russian Federation
The United Kingdom
United States of America
2020-12-17