# Project description

## Phase 1:

Within this stage, user can query country data from the World Bank API using a simple user interface.

### Getting started

#### Installation

This program is developed using Jupyter notebook on macOS.

To install required packages, user need to run “Part A” cell from the program file. If this !pip installation fails, it’s likely due to errors or mismatches between the installation directory and the working directory. To resolve this issue, run the code in the cell marked “Part B”, restart the kernel, and run “Part A” again.

#### Launching the GUI

After installation, run “Part C” to “Part D” and a user interface would pop up.

### User instructions

This program helps users to query country data from the World Bank API. Currently the program queries 6 indicators: Nominal GDP in USD, Real GDP in 2010 USD, Total population, Current account balance in USD, Unemployment rate, Doing business index (1=most friendly). Graphical user interface

Description automatically generated with medium confidence

1. Enter a country name in this field. There are no specific requirements for upper or lower cases or abbreviation. The program supports fuzzy match for country names using pycountry package.
2. This button triggers the query function.

The program returns the latest data point from the past 3 years. If there is no data in the past 3 years, the program will print a warning message in (4)

1. Results
2. A warning message will be displayed here if the specified country has any indicator which hasn’t been updated in 3 years.

Example:

In this example, the country name Zimbabwe is not entered in full. The program fuzzy matched this input into Zimbabwe and returned results. As Zimbabwe hasn’t had any updates for current account balance in the past three years, a warning message is displayed.

Graphical user interface, text, application

Description automatically generated

## Phase 2:

With this update, user can obtain information for two countries at the same time. For example, user can query data from a foreign country and his/her home country at the same time for reference.

Installation and launching procedures are identical to phase 1.

### What’s new?

Key updates:

1. Added a button to verify if user inputs are correctly identified. This eliminate the possibility that some user inputs with typos are mismatched to other country names unintendedly.
2. Expanded the function to allow user to input two countries at the same time. For example, user can query data from a foreign country and familiar country at the same time for reference.
3. Converted the query results to readable values. Ex. China’s 2019 nominal GDP 14279937467431 is converted to 14.28 trillion. Unemployment rate is also rounded and displayed with the percentage sign.
4. Added calculations to compare the data between two countries. For indicators such as GDP figures, population, and current account balance, the program compares the two values via division. For example, when a user compares China against US, the program divides China’s GDP by the US GDP and display “China’s GDP is 0.67 times of United States’”.

For indicators which are percentages or indices, the program compares to two numbers and display the results. For example, when a user compares China against US, the program compares Chinese unemployment rate against US’s and display Chinese rate is “smaller than United States’”.

1. Wrapped text in the label for warnings.

### User instructions for May update

Graphical user interface, application, Word

Description automatically generated

1. Same as phase 1
2. This button triggers the function to check user input in (1) and (3).
3. Enter a country name in this field. The program supports fuzzy match for country names using pycountry package.
4. Fuzzy match results for (1) and (3) will be displayed here for user to confirm.
5. Same as phase 1
6. Same as phase 1
7. Same as phase 1

Examples:

[1] Country name fuzzy match

Graphical user interface, text, application

Description automatically generated

[2] Updated outputs

Graphical user interface, text, application, email

Description automatically generated

## Failed features and future improvements:

1. Using Google trends to produce conversation starters (“Part E ”).

Table

Description automatically generatedThis program failed to utilize the Google trend API to generate conversation starters. Although it’s very straight forward to obtain the trending searches related to any country, a more sophisticate algorithm is needed to curate the returns.

For example, currently all the trending searched related to China are about the coronavirus. The original intention of this program is to find a few hot topics about a country that the user can use in his or her conversation with people from that foreign country. However, asking a Chinese citizen about the coronavirus would be inappropriate and even offensive under the current social environment.

1. Formatting of the warning message

To accommodate the possibility that a country may have several indicators which haven’t been updated since 2017, this program stores warning messages a dictionary called flag whose keys are indicator names and values are whether that indicator has value after 2017 (in string format). When a country has updated values for all indicators, flag is empty and the warning message displayed is “dict\_values([])”. Maybe a better function can be developed to improve the warning message for all possible scenarios.

## References

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