CIS 41B Spring 2023
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Final Project Proposal

Description: This project uses the REST Countries API to create a database of countries. A screenshot of the JSON data associated with one country (Andorra) is on page 3. There are 250 rows in the dataset as it includes not just independent countries but also such entities as Palestine and Guam. Information for each country includes:

• Common name, e.g., Andorra
• Official name, e.g., Principality of Andorra
• Capital
• Population
• Currency
• Continent, etc.

The database is linked to a GUI front end that allows users to choose what data they want to view. For example, the user can choose to display the top five countries in Asia by population or by area. Or the user can choose specific countries to view general information about them.

Skills used:
• API call, JSON
• SQLite
• numpy or pandas
• matplotlib
• Tkinter

New skills for the project:
• Many-to-many relationships among database tables, e.g., Turkey and Russia straddle continents
• Writing out database table to CSV file
• Box plots for matplotlib, e.g., show the population distribution of all the countries by continent using box plots
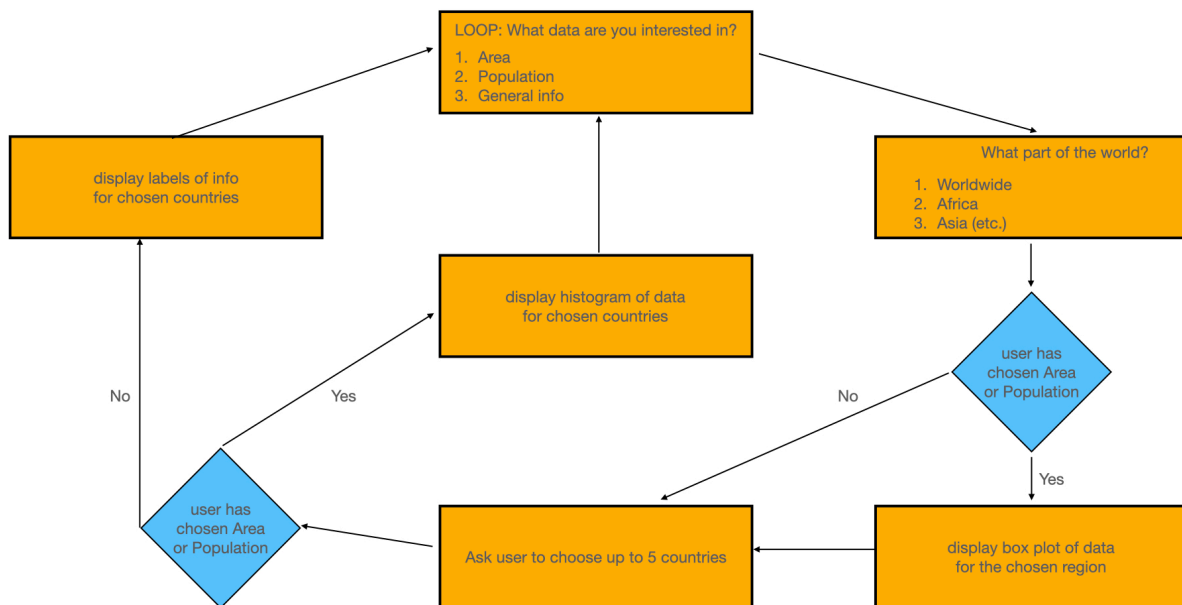
Task responsibilities:

- James Kang: Front end (TKinter, matplotlib)
- Surajit Bose: Back end (web access, database, numpy or pandas)

Figures:

- TKinter main loop (this page)
- Sample JSON data (next page)

Figure 1. Program flow with TKinter main loop

Figure 2. JSON data about sample country, Andorra

```
▼ 3:
  ▼ name:
       common:          "Andorra"
       official:        "Principality of Andorra"
     ▶ nativeName:      {…}
   ▶ tld:               […]
     cca2:              "AD"
     ccn3:              "020"
     cca3:              "AND"
     cioc:              "AND"
     independent:       true
     status:            "officially-assigned"
     unMember:          true
  ▼ currencies:
     ▼ EUR:
          name:         "Euro"
          symbol:       "€"
   ▶ idd:               {…}
  ▼ capital:
       0:               "Andorra la Vella"
   ▶ altSpellings:      […]
     region:            "Europe"
     subregion:         "Southern Europe"
  ▼ languages:
       cat:             "Catalan"
   ▶ translations:      {…}
   ▶ latlng:            […]
     landlocked:        true
  ▼ borders:
       0:               "FRA"
       1:               "ESP"
     area:              468
   ▶ demonyms:          {…}
     flag:              "🏳️"
   ▶ maps:              {…}
     population:        77265
     fifa:              "AND"
   ▶ car:               {…}
   ▶ timezones:         […]
  ▼ continents:
       0:               "Europe"
   ▶ flags:             {…}
   ▶ coatOfArms:        {…}
     startOfWeek:       "monday"
   ▶ capitalInfo:       {…}
   ▶ postalCode:        {…}
```