Lab 13 – JSON and Python

Your job is to:

1. Read two files in JSON format into Python structures
2. Extract from the structures data where the data from both structures have a common key
3. Create a structure with this extracted data (described on page 3)
4. Write this data to a JSON file, *indenting the levels by 4*

Let's peek at these files. The first is **countries.json:**

```
[
    {
        "id": 1,
        "name": "Afghanistan",
        "iso3": "AFG",
        "iso2": "AF",
        "phone_code": "93",
        "capital": "Kabul",
        "currency": "AFN"
    },
    {
        "id": 2,
        "name": "Aland Islands",
        "iso3": "ALA",
        "iso2": "AX",
        "phone_code": "+358-18",
        "capital": "Mariehamn",
        "currency": "EUR"
    },   # and so on…..
```

The second is **countries_states_cities.json:**

```
[
    {
        "id": 3901,
        "name": "Badakhshan",
        "country_id": 1,
        "cities": [
            "Ashkāsham",
            "Fayzabad",
            "Jurm",
            "Khandūd",
            "Rāghistān",
            "Wākhān"
        ]
    },
    {
        "id": 3871,
        "name": "Badghis",
        "country_id": 1,
        "cities": [
            "Ghormach",
            "Qala i Naw"
        ]
    },   and so on…..
```

Note how *both files have a country identifier ("id" and "country_id")* that you'll use to *extract data common to the same countries from both files.*

Country name is from **countries.json;** states/counties/provinces for a country are from **countries_states_cities.json.**

The **structure you'll create looks like this (for the first 4 countries):**

```
{
  "Afghanistan":
    {"capital": "Kabul",
      "states": ["Badakhshan", "Badghis", "Baghlan", "Balkh",
                 "Bamyan", "Daykundi", "Farah", "Faryab", "Ghazni",
                 "Gh\u014dr", "Helmand", "Herat", "Jowzjan", "Kabul",
                 "Kandahar", "Kapisa", "Khost", "Kunar",
                 "Kunduz Province", "Laghman", "Logar", "Nangarhar",
                 "Nimruz", "Nuristan", "Paktia", "Paktika",
                 "Panjshir", "Parwan", "Samangan", "Sar-e Pol",
                 "Takhar", "Urozgan", "Zabul"]
    },
  "Aland Islands":
    {"capital": "Mariehamn",
      "states": []
    },

   "Albania":
     {"capital": "Tirana",
      "states": ["Berat County", "Berat District", "Bulqiz\u00eb
                District", "Delvin\u00eb District", "Devoll District",
                *** A lotta states ***,  "Vlor\u00eb County",
                "Vlor\u00eb District]
     }
   "Algeria":
     {"capital": "Algiers",
      "states": ["A\u00efn Defla Province", "A\u00efn T\u00e9mouchent
                 *** Whole buncha states , "Tizi Ouzou Province",
                "Tlemcen Province"]

      }
}
```

What to do, what to do.....

Some suggestions:

1. Read both files into separate data structures, say:
    - *countries_list* holds data from “countries.json”
    - *countries_states_lis*t holds data from “countries_states_cities.json”
2. Maybe print out the first few elements of each structure to see what it looks like. Of course, you can browse the files themselves
3. Create an *empty dictionary.*
4. Iterate over the first 4 numbers (this represents info for country_id = 1, 2, 3, 4)
5. Extract from *countries_list* the **dictionary** that holds info for a country_id. Your result should resemble (for country_id = 1):

    ```
    {
     "id": 1,
     "name": "Afghanistan",
     "iso3": "AFG",
     "iso2": "AF",
     "phone_code": "93",
     "capital": "Kabul",
     "currency": "AFN"
     },
    ```

6. Save the *country name* by accessing the above dictionary
7. Extract *all the info for this country_id* from *countries_states_list*
8. Extract *all the states/counties/provinces from the extract from Step 7*

9. Create an entry in the empty dictionary you created in step 3 that resembles:

   Key - Country name (from country_id_list_for_extract)

   Value - Dictionary {key = 'capital' value=country_id_list_for_extract,
   key = 'states', value = List of states/counties from
   states_from_country_extract

   Each iteration over a country_id *will produce a dictionary entry keyed on country name with the value for that key as described above*

10. Write out the extract to a file (extract.json), *indenting the levels by 4 spaces*