COMPUTER PROGRAMMING I

2nd Homework Assignment

Due on: November 22, 2023

You are given a dictionary containing information about various countries. The information from the countries is read from a file ("**countries.json**"):

```
with (open("countries.json", "rt", encoding="utf8") as world):
    countries = json.load(world)
```

The file, "**countries.json**" is available in itslearning with the homework definition file. Each entry in the dictionary has the following format:


```
 {
  "capital": 3358,
  "cities": [
   {
    "district": "Istanbul",
    "id": 3357,
    "name": "Istanbul",
    "population": 8787958
   },
   {
    "district": "Ankara",
    "id": 3358,
    "name": "Ankara",
    "population": 3038159
   }, ...,
   {
    "district": "Balikesir",
    "id": 3418,
    "name": "Bandirma",
    "population": 90200
   }
  ],
  "id": "TUR",
  "continent": "Asia",
  "gnp": 20000.0,
  "governmentForm": "Republic",
  "headOfState": "Ahmet Necdet Sezer",
  "independenceYear": 1923,
  "lifeExpectancy": 85.0,
  "localName": "Türkiye",
  "name": "Turkey",
  "population": 66591000,
  "region": "Middle East",
  "surfaceArea": 774828.0
 }
```

Task-1

Find the distinct continents. Make sure that continents are printed in alphabetical order.

```
import json
with (open("countries.json", "rt", encoding="utf8") as world):
    countries = json.load(world)
    # Problem: Find the distinct continents
    # TODO: INSERT YOUR CODE HERE
print(continents)
```

Output:

['Africa', 'Antarctica', 'Asia', 'Europe', 'North America', 'Oceania', 'South America']

Submission:

Put your Python code in a file named *your-student-id*-task1.py (e.g., 490606-task1.py).

Note:

- Do NOT use any python functions.
- Make sure to include comments to explain the code.

Task-2

Find the richest country in each continent based on GNP (Gross National Product):

```
import json
with (open("countries.json", "rt", encoding="utf8") as world):
    countries = json.load(world)
    # Problem: Find the richest country in each continent
    # TODO: INSERT YOUR CODE HERE
    for continent, country in richest.items():
        print(f"{continent}: {country['name']} {country['gnp']}")
```

Output:

North America: United States 8510700.0

Asia: Japan 3787042.0

Africa: South Africa 116729.0

Europe: Germany 2133367.0

South America: Brazil 776739.0

Oceania: Australia 351182.0

Submission:

Put your Python code in a file named *your-student-id*-task2.py (e.g., 490606-task2.py).

Note:

- Do NOT use any python functions.
- Make sure to include comments to explain the code.

Task-3

Find the total population of capitals of each continent:

```
import json
with (open("countries.json", "rt", encoding="utf8") as world):
    countries = json.load(world)
    # Problem: Find total population of capitals of each continent
    # TODO: INSERT YOUR CODE HERE
    for continent, population in capitalPopulations.items():
        print(f"{continent}: {population}")
```

Output:

North America: 19120216

Africa: 47714282

Europe: 51917214

Asia: 99542793

South America: 28900527

Oceania: 1142110

Submission:

Put your Python code in a file named *your-student-id*-task3.py (e.g., 490606-task3.py).

Note:

- Do NOT use any python functions.
- Make sure to include comments to explain the code.

Task-4

Find out how many countries are on each continent:

```
import json
with (open("countries.json", "rt", encoding="utf8") as world):
    countries = json.load(world)
    # Problem: Find out how many countries are on each continent
    # TODO: INSERT YOUR CODE HERE
    for continent, counts in num_countries_in_continents.items():
        print(f"{continent}: {counts}")
```

Output:

North America: 37

Asia: 51

Africa: 58

Europe: 46

South America: 14

Oceania: 28

Antarctica: 5

Submission:

Put your Python code in a file named *your-student-id*-task4.py (e.g., 490606-task4.py).

Note:

- Do NOT use any python functions.
- Make sure to include comments to explain the code.

Task-5

Find the least and most populated cities of countries:

```
import json
with (open("countries.json", "rt", encoding="utf8") as world):
    countries = json.load(world)
    # Problem: Find the least and most populated cities of countries
    # TODO: INSERT YOUR CODE HERE
    for name, minmax_city in country_cities_minmax_pop.items():
        min_city = minmax_city['min']
        max_city = minmax_city['max']
        print(f"{name}: min: {min_city['name']}: {min_city['population']}"
        print(f"{name}: max: {max_city['name']}: {max_city['population']}"
```

Output:

Aruba: min: Oranjestad: 29034

Aruba: max: Oranjestad: 29034

Afghanistan: min: Mazar-e-Sharif: 127800

Afghanistan: max: Herat: 186800

Angola: min: Namibe: 118200

Angola: max: Luanda: 2022000

. . .

Zambia: min: Luanshya: 118100

Zambia: max: Lusaka: 1317000

Zimbabwe: min: Gweru: 128037

Zimbabwe: max: Harare: 1410000

Submission:

Put your Python code in a file named *your-student-id*-task5.py (e.g., 490606-task5.py).

Note:

- Do NOT use any python functions.
- Make sure to include comments to explain the code.

Submission:

Submit **all your Python files** in a file named *your-student-id*-**hw2.zip** (e.g., 490606-**hw2.zip**).

IMPORTANT

- Academic dishonesty, including but not limited to cheating, plagiarism, and collaboration, is unacceptable and subject to disciplinary action. Any student found guilty will have a grade of F. Assignments are due in class on the due date. Late assignments will generally not be accepted. Any exception must be approved. Approved late assignments are subject to a grade penalty.