DEPARTAMENTO DE ENGENHARIA INFORMÁTICA

1º Semestre 2020/2021

Projeto Países/COVID-19

Estruturas de Informação

The aim of this project is to develop an application that allows the management of information from several countries related to the COVID-19 pandemic, such as population, average age, number of cases, number of deaths, risk factor indices such as age, diabetes, etc.

The information can be found in the text file: **`owid-covid-data.csv`**

Using the Java Collection Framework, develop the necessary classes to implement the following functionalities **as efficiently as possible**:

1. Upload and save the information related to the countries and respective data of the pandemic COVID-19 from the text file provided.
2. Present a list of countries ordered in ascending order of the minimum number of days it took to reach the 50,000 positive cases.

iso_code	continent	location	date	total_cases	mindays
CHN	Asia	China	2020-02-13	59865	43 days
ITA	Europe	Italy	2020-03-22	53578	81 days
ESP	Europe	Spain	2020-03-25	57506	84 days
USA	North America	United States	2020-03-29	55231	84 days
DEU	Europe	Germany	2020-04-01	52547	88 days
FRA	Europe	France	2020-04-01	52128	91 days
	...				
DZA	Africa	Algeria	2020-09-22	50023	265 days
CZE	Europe	Czech Republic	2020-09-22	50764	265 days
CHE	Europe	Switzerland	2020-09-22	50264	265 days
MDA	Europe	Moldova	2020-09-27	50534	270 days

3. Return the total of new_cases / new_morts by continent / month, ordered by continent / month.

continent	month	new_cases	new_deaths
Africa	1	0	0
Africa	2	3	0
Africa	3	5134	166
Africa	4	31598	1425
Africa	5	105535	2480
Africa	6	251824	5807
...			
South America	6	1336057	44261
South America	7	1841061	58034
South America	8	2206025	59364
South America	9	1735437	48690

4. Return, for each day of a given month and for a given continent, countries ordered in decreasing order of the number of new positive cases. For example, for the month of September and for the continent of Europe:

```
Day 1 -->   Spain (8115)
            Russia (4993)
            France (3082)
      …
Day 2 -->   Spain (8581)
            France (4982)
```

```
                Russia (4729)
                  …
                  …
Day 29 --> Russia (8135)
           France (4070)
           United Kingdom (4044)
```

5. Return in an appropriate structure, all countries with more than 70% of smokers, ordered in decreasing order of the number of new deaths. For example:

```
[[Russia, 81.7, 20385], [Chile,75.7,12698],… ]
```

Rules

- The assessment of the project will be based mostly on the proposed classes, namely in terms of its adequacy to the **Object Oriented Paradigm** and the efficiency of the data structures used and requested functionalities.
- The work must be done in **groups of two students**. The laboratory class teacher must be informed of the groups by the end of the first week of classes.
- The project must be developed in Java and **all functionalities tested through unit tests** and using the data file provided.
- The use of the **Git version control** tool is mandatory.
- The work must be submitted in Moodle by **midnight on the 1st of November**. From this date, the grade of the work will be penalized 10% for each day of delay and work will not be accepted after two days of the indicated date.
- In the following week of the delivery date, the teacher of the laboratory classes will make an evaluation of the submitted project with each work group.