Hospital data relating to the COVID-19 epidemic in France

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1 Description

The goal of this project is to develop an application that will display information on hospital data relating to the COVID-19 epidemic in France.
These data are specified by department and sex of the patient: number of hospitalized patients, number of people currently in intensive care, cumulative number of people returned home, cumulative number of deceased people.
The goal of this project is to develop an application that will display data aggregated by month for a given (French) department:

- The accumulation of new admissions to the hospital
- The accumulation of new intensive care admissions
- The accumulation of home returns
- The accumulation of deaths

```
|-------------------------------------------------------------------|
| Bonjour, nous sommes le 21/10/2020, il est 10H38.                 |
| Vous avez choisi le département "Eure".                           |
|-------------------------------------------------------------------|
| Mois   | acc hosp | acc int care | acc home returns | acc deaths |
|-------------------------------------------------------------------|
| may    |      100 |           30 |              500 |         10 |
| juin   |       90 |           20 |              754 |          8 |
| etc.                                                              |
|-------------------------------------------------------------------|
```

How the program works

- The software asks the user to choose a town he wants and then displays the information given above.
- The data will be downloaded from an API (open data from the Internet).

Data

- The website is https://data.opendatasoft.com/explore/
- Search for the « Données hospitalières relatives à l'épidémie de COVID-19 en France » dataset, DGAL (API tab)

2 Achievements

- The overall program is divided into sub-objectives with points assigned to them (NF = "Not Functional", F = "Functional"), like in “agile project management”.
- Do not hesitate to search for information on the various libraries available in Python on the Internet☺.
- **Please complete your project sheet in the folder provided on the MSc TEAMS team, as your project progresses.**

Downloading raw data « manually »

Objectives	NF	F	Pts	Mark
(No Python) Directly on the opendata site, API tab: display the dataset in JSon format in the browser from a URL. Filter the criteria for a given French department. Set the filter criteria: sex = “Tous” (=all). For this, use the “refine” criteria and set the “row” criteria at 10 000. Copy-paste the URL into a new Python file (in comment!).		F	1	1

Python programming

Objectives	NF	F	Pts	Mark
Get today's date (datetime library).		F	0.5	0.5
Display a welcome message with both today’s date and explanations on your software.		F	0.5	0.5
Let the user enter the (French) department or region (input).		F	0.5	0.5
Download the previous dataset in JSon format (requests library).		F	1	1
Display the correctly formatted data set on the screen (with line breaks and indentations).		F	1	1
Create a subfolder called “data” without error if it already exists.		F	1	1
Save data as a JSon file on the hard disk drive, in the “data” folder that you created previously.		F	1	1
Once the dataset has been downloaded, extract and display information from the “description” part on the screen (refer to the description section).		F	2	2
Display additional information of your choice.		F	1	1
Manage exceptions when extracting data (try: except: keywords).		F	1	1
Display charts with Python matplotlib (e.g. accumulation of new admissions to the hospital) – depends on both the quality and number of created charts.		F	X	1
Compute & display charts with descriptive statistics (e.g. day new intensive care of each day is computed on it is calculated as the sum of the admissions of the last seven days).		F	X	0.5
Display a wordcloud.		F	0.5	0.5
In the wordcloud created previously, the list of words is generated dynamically (e.g. from user inputs and downloaded data), with personalized stopwords.		F	1.5	1.5
Create a CSV file (for this, create a str with “;” and “\n” as resp. columns/line separators) and then save it on the hard disk drive, in the “data” folder previously created.		F	1.5	1.5
Add data, text, charts and your wordcloud in a generated multi-page PDF.		F	1.5	1.5
Generate an .html page with the display of the information previously displayed in table form (Same method as for the CSV file with <table>, <tr>, <td> tags), then add the charts and the wordcloud (<img> tag) previously created. Finally save it on the hard disk drive, in the “data” folder previously created.		F	2	2

Improvements

Additional data: Hospital emergency data - SOS Médecins relating to the COVID-19 epidemic in France

Objectives	NF	F	Pts	Mark
Add data from the « Données urgences hospitalières - SOS Médécins relatives à l'épidémie de COVID-19 en France » other dataset from a URL. For a given French department, please filter the criteria: “Libellé tranches d'âge” = “tous âges” (=all). For this, use the “refine” criteria and set the “row” criteria at 10 000.	NF		3	
Display charts add them to your multi-page PDF.	NF		X	

Web application

Objectives	NF	F	Pts	Mark
Develop a web page with the Flask library, displaying results from a predefined input. Use a template.		F	2	2
Add the Wordcloud and charts previously created.		F	1	1
Add buttons to download data in both Json and CSV format.		F	1	1
Add an input form to allow the user choose both the weather station and the month.	NF		3	

Miscellaneous

Objectives	NF	F	Pts	Mark
Mapping data with the Folium library, e.g. after retrieving data from several places.	NF		X	
Create charts and dashboards with Tableau software e.g. from all raw data in CSV or Excel.		F	2	2