PROGRAMMING EXERCISE 3

Due Date: 06/06/2021

Leaflet is an open-source JavaScript library for mobile-friendly interactive maps. In this exercise, you will display a map using Leaflet and D3, and learn to handle GeoJSON. Before you move onto exercise, be familiar with Leaflet.js by following the steps in https://leafletjs.com/examples/quick-start/. The link will provide you basic materials like how to set a map and draw polygons on it. To know more options that Leaflet API has, please check this: https://leafletjs.com/reference-1.7.1.html.

When you present the data on a map, you need to consider geographical information. GeoJSON, as an open standard format for encoding a variety of geographic data structures, successfully represents geographic features and their non-spatial attributes. You are able to draw points, lines, and polygons using it. You can download public GeoJSON from the internet, or make your own GeoJSON as below:

Listing 1: Sample GeoJSON

```
1  {
2    "type": "Feature",
3    "geometry": {
4      "type": "Point",
5      "coordinates": [125.6, 10.1]
6    },
7    "properties": {
8      "name": "Dinagat Islands"
9    }
10 }
```

Your task is to present the given data on a world map. You will be given a COVID-19 dataset in two different formats, csv and json. Choose one that you are more comfortable with. Each dataset contains lists of countries with ISO country codes, continents, date, confirmed cases and deaths. You will focus on total confirmed cases changing as the time passes, and display the data into a form of choropleth map. Please follow the guideline below to receive full credit.

- (1 point) Set the center of viewpoint to Ulsan, ROK

- (3 point) Use a sequential color pallette (single-hue) to depict the number of total confirmed cases on the map

  - (2 point) Set the data range for each section of color on your own

  - (.5 point) Define more than 7 divisions of color

  - (.5 point) Plot a legend for the choropleth map

- (2 point) Show a tooltip for the mouseover event on a country region

- – (2 point) Include the country name and the number of its total confirmed case in each tooltip

- (3 point) Filter the data by date

  - – (1 point) Enable to check data of ONE year
  - – (2 point) Use a date picker or a date slider to select the date you want to check
    - ∗ The data should be changed to a corresponding date when you select

The total score that you can receive from this exercise is 9 points. Please read the direction carefully, and any additional function to the graph is welcomed for practice. You can ask a question on the blackboard discussion only if it is not described in the guideline. You can use any web framework, but please attach an explanation to run your code (for any installation, create requirement.txt). The file title should be *studentID_firstname.zip*. Any submission past the deadline will result 0 point.