XIAMEN UNIVERSITY MALAYSIA

PROJECT

Course Code: BCS135

Course Name: Python Programming Language

Question Paper Setter: Dr. Sugumaran Nallusamy

Academic Session: 2020/10 Question Paper: A ☑ B ☐

Total No. of Pages: 7

INSTRUCTIONS TO CANDIDATES

1. This paper consists of 8 Questions. Answer ALL questions in this question paper.
2. Read the above information carefully to ensure you have the correct and complete question paper.
3. You are required to answer **ALL** questions, and submit the ANSWER SCRIPT before **22/1/2021**.

DO NOT TURN OVER THIS PAGE UNTIL INSTRUCTED TO DO SO.

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Project

Section A

Description

The world is now in a battle against Covid-19 (coronavirus), a disease caused by a previously unknown coronavirus that has spread to over 200 countries and regions. Every day, thousands of people have been infected and many of them have died due to Covid-19. Countries are working hard and have come out with various strategies to stop the spread of this virus including total home lock down, tracing the clusters of infected people and quarantine them for 2 weeks and so on. The World Health Organization (WHO) has created numerous action plans including vaccine development, and analyzing the current dataset provided by each country on Covid-19 in order to curb the spread of this virus. Therefore, real-time analyses of epidemiological data are needed to increase situational awareness and informed interventions. In this project, data on Covid-19 have been provided to analyse the questions given in Section B.

Data Source:

The data file attached with this document is named as 12-19-2020.csv

Field description

- FIPS: US only. Federal Information Processing Standards code that uniquely identifies counties within the USA.
- Admin2: County name. US only.
- Province_State: Province, state or dependency name.
- Country_Region: Country, region or sovereignty name. The names of locations included on the Website correspond with the official designations used by the U.S. Department of State.
- Last Update: MM/DD/YYYY HH:mm:ss (24 hour format, in UTC).
- Lat and Long_: Dot locations on the dashboard. All points (except for Australia) shown on the map are based on geographic centroids, and are not representative of a specific address, building or any location at a spatial scale finer than a province/state. Australian dots are located at the centroid of the largest city in each state.
- Confirmed: Counts include confirmed and probable (where reported).
- Deaths: Counts include confirmed and probable (where reported).
- Recovered: Recovered cases are estimates based on local media reports, and state and local reporting when available, and therefore may be substantially lower than the true number. US state-level recovered cases are from COVID Tracking Project.
- Active: Active cases = total cases - total recovered - total deaths.
- Incident_Rate: Incidence Rate = cases per 100,000 persons.
- Case_Fatality_Ratio (%): Case-Fatality Ratio (%) = Number recorded deaths / Number cases.
- All cases, deaths, and recoveries reported are based on the date of initial report.

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Section B

1. Write a Python program to get the latest number of confirmed, deaths, recovered and active cases of COVID-19 country-wise. [10 marks]

Sample Output:

	Country_Region	Confirmed	Deaths	Recovered	Active
0	Afghanistan	49681	2047	38613	9021.0
1	Albania	52542	1074	27831	23637.0
2	Algeria	94781	2659	62869	29253.0
3	Andorra	7560	80	6963	517.0
4	Angola	16626	386	9518	6722.0
5	Antigua and Barbuda	152	5	141	6.0
6	Argentina	1537169	41763	1362617	132789.0
7	Armenia	153173	2616	131931	18626.0
8	Australia	28168	908	25704	1556.0
9	Austria	337209	5209	300611	31389.0
10	Azerbaijan	199127	2175	135462	61490.0
11	Bahamas	7733	164	6109	1460.0
12	Bahrain	90062	349	88178	1535.0
13	Bangladesh	499560	7242	435601	56717.0
14	Barbados	307	7	280	20.0
15	Belarus	171579	1316	149353	20910.0
16	Belgium	623760	18545	0	605215.0
17	Belize	9791	213	4779	1541.0
18	Benin	3152	44	2972	136.0
19	Bhutan	443	0	423	20.0
20	Bolivia	149770	9035	127815	12920.0
21	Bosnia and Herzegovina	105524	3625	70620	31279.0

2. Get the US province-wise cases of confirmed, deaths and recovered cases of COVID-19. [10 marks]

Sample Output

	Province_State	Confirmed	Deaths	Recovered
0	California	610372	8817	0
1	Illinois	368824	7681	0
2	Arizona	277071	4661	0
3	Florida	272098	4050	0
4	Texas	217086	3233	0
...	...	...	...	...
3269	New York	0	146	0
3270	Ohio	0	0	0
3271	Nevada	0	0	0
3272	Hawaii	0	0	0
3273	Kansas	0	129	0

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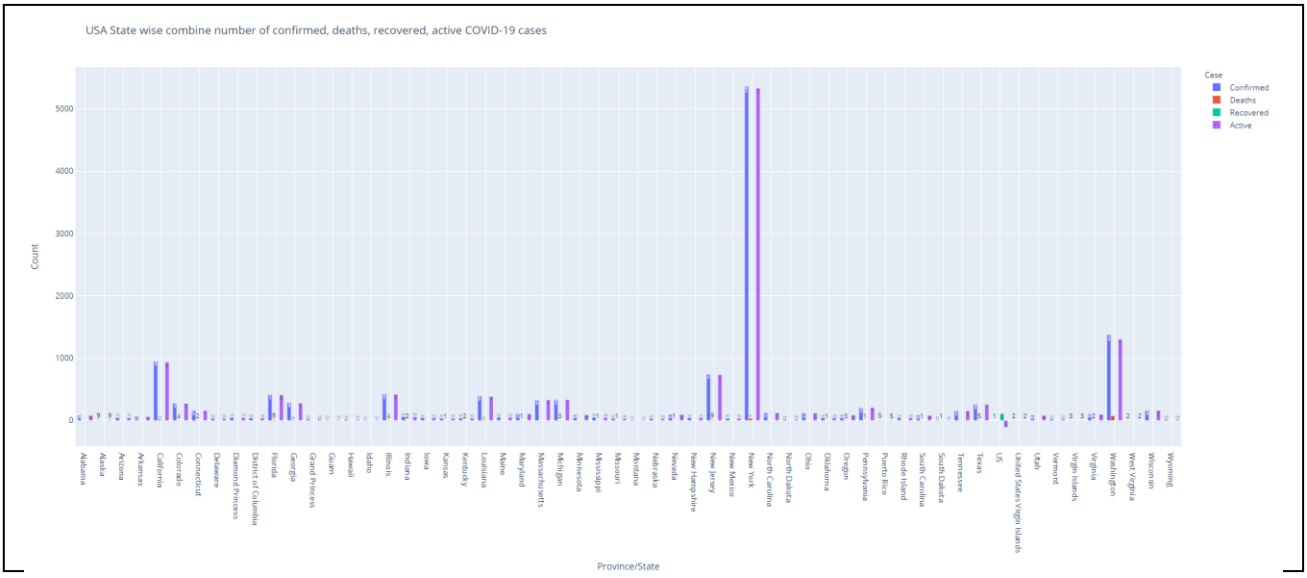
3. Write a Python program to get the top 10 countries with highest number of confirmed COVID-19 cases. [10 marks]

Sample Output

```
Dataset information:
&                          Last Update  Confirmed
Country/Region
China           2020-03-18T12:13:09       67800
Italy           2020-03-18T17:33:05       35713
Iran            2020-03-18T12:33:02       17361
Spain           2020-03-18T13:13:13       13910
Germany         2020-03-18T19:33:02       12327
France          2020-03-18T18:33:02        9043
Korea, South    2020-03-18T02:53:03        8413
Switzerland     2020-03-18T14:53:05        3028
United Kingdom  2020-03-18T14:53:05        2626
US              2020-03-18T19:53:03        2495
```

4. Visualize the state/province-wise combined number of confirmed, deaths, recovered, active COVID-19 cases in Germany. [15 marks]

Sample Output



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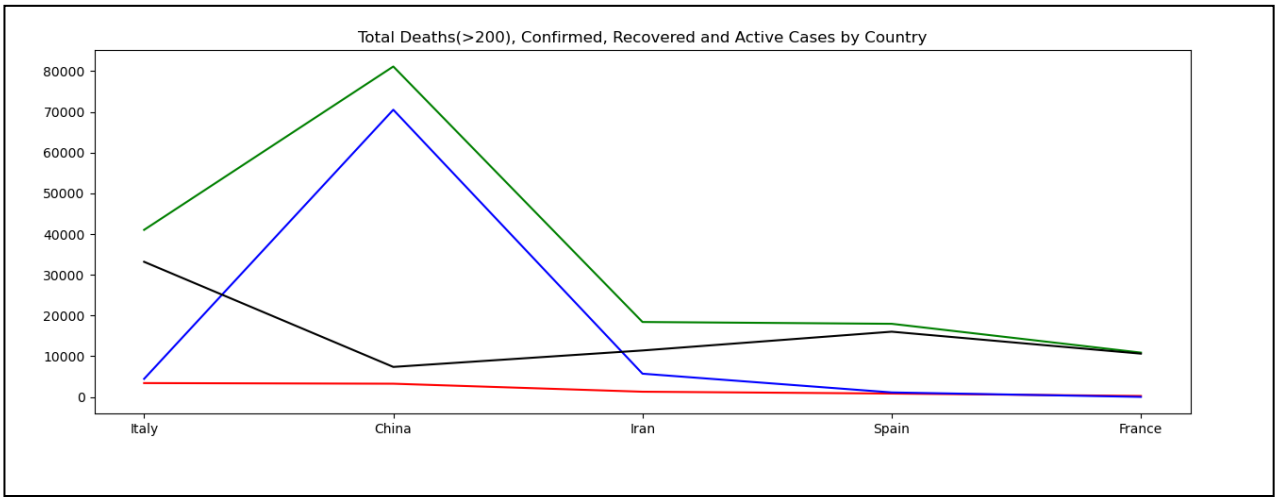
5. **Write a Python program to create a plot (lines) of total deaths, confirmed, recovered and active cases, countrywise, where the number of deaths are greater than 100,000.** [15 marks]

Sample Output



6. Write a Python program to list the countries which have the percentage of deaths to be more than 10% of confirmed cases. [10 marks]

Sample Output

	Country_Region	Confirmed	Deaths	Death_Rate
104	MS Zaandam	9	2	0.222222
188	Yemen	2087	606	0.290369

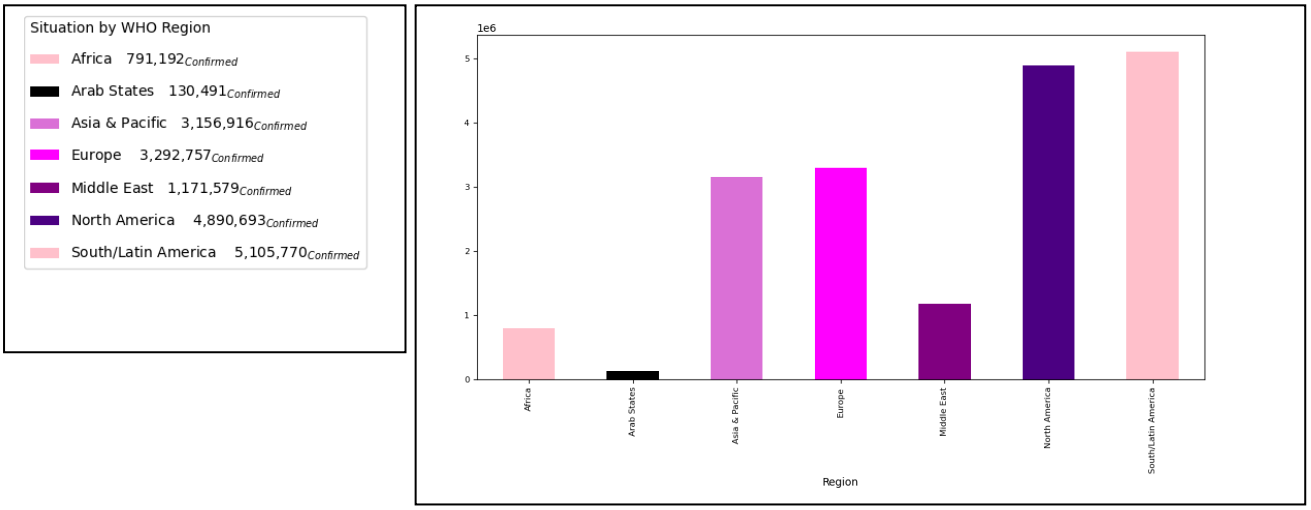
7. Write a Python program to list countries which have no of percentage recovered is 80% out of confirmed case. [10 marks]

Sample Output

	Country_Region	Confirmed	Recovered	Recovered_Rate
3	Andorra	7560	6963	0.921032
5	Antigua and Barbuda	152	141	0.927632
6	Argentina	1537169	1362617	0.886446
7	Armenia	153173	131931	0.861320
8	Australia	28168	25704	0.912525
..	...	...	...	...
184	Vanuatu	1	1	1.000000
185	Venezuela	109781	104208	0.949235
186	Vietnam	1411	1269	0.899362
189	Zambia	18620	17756	0.953598
190	Zimbabwe	12151	9984	0.821661

[116 rows x 4 columns]

8. Visualize the confirmed cases based on the region as shown in the Figure below. [20 marks]



Students can define the region based on the link given below:
https://meta.wikimedia.org/wiki/List_of_countries_by_regional_classification

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Project Submission

The zipped project folder, Python source code (in text file) need to be uploaded to Moodle before Friday, **22/1/2021, 9:00 pm.**

Filename
You MUST name your text file with your student ID and name, as follows:

MAT1000_LeeChongWei.txt

Plagiarism
It is important that your solutions to the practical assignment be your own work. It is perfectly acceptable to seek advice when completing the practical assignment, but this must not be taken to the point where what submitted is in part someone else's work. Anyone caught red-handed will be given zero mark.