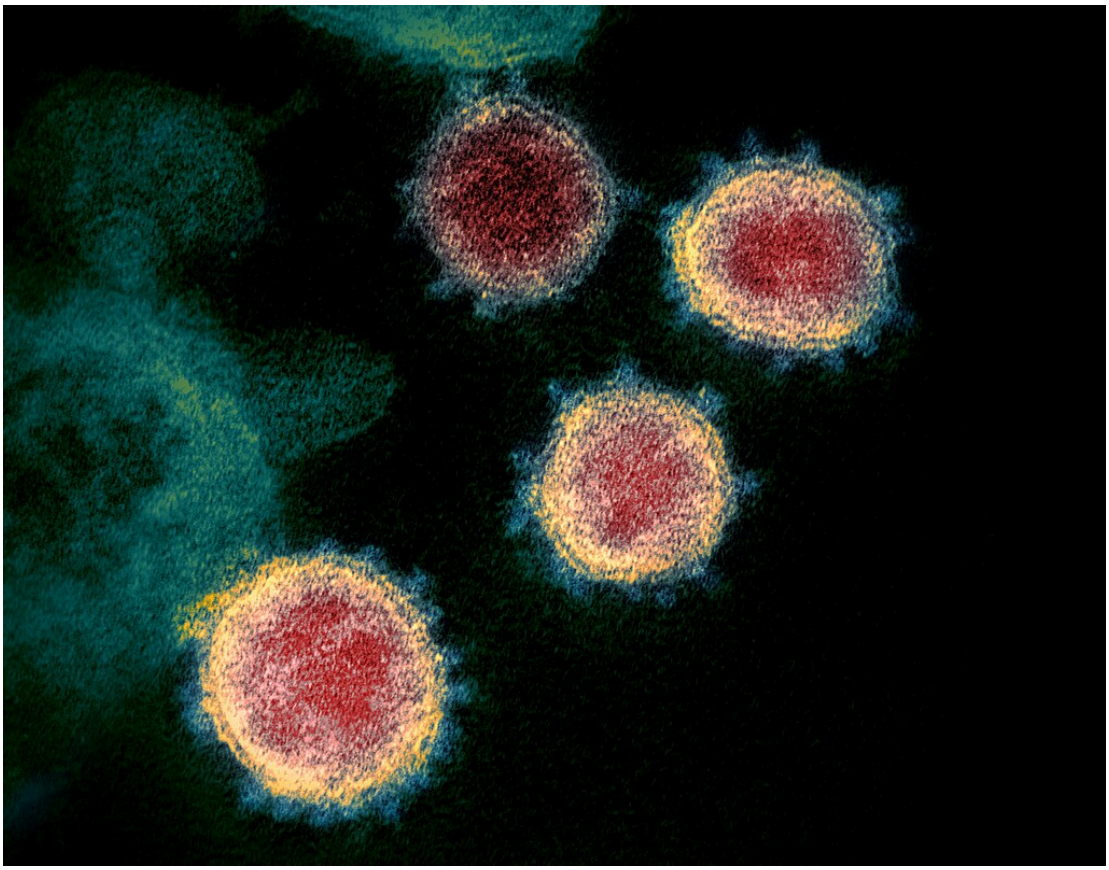
Covid-19 Micro Analysis Using Pandas

We have taken a small dataset of covid-19 data just to understand Pandas Library understaning purpose.

The date used here is till 29-April-2020, and has records as on 29-April-2020.

The data is available as a excel/csv file, which is downloaded from the kaggle. We can use the entire dataset for the analysis using Pandas Library.



In [32]:
```
import pandas as pd
```

In [33]:
```
df=pd.read_csv("covid_19_data.csv")
```

In [34]:
```
df.head(5)
```

Out[34]:

	Date	State	Region	Confirmed	Deaths	Recovered
0	4/29/2020	NaN	Afghanistan	1939	60	252
1	4/29/2020	NaN	Albania	766	30	455
2	4/29/2020	NaN	Algeria	3848	444	1702
3	4/29/2020	NaN	Andorra	743	42	423
4	4/29/2020	NaN	Angola	27	2	7

In [35]:
```
df.count() # total count column wise
```

Out[35]:
```
Date         321
State        140
Region       321
Confirmed    321
Deaths       321
Recovered    321
dtype: int64
```

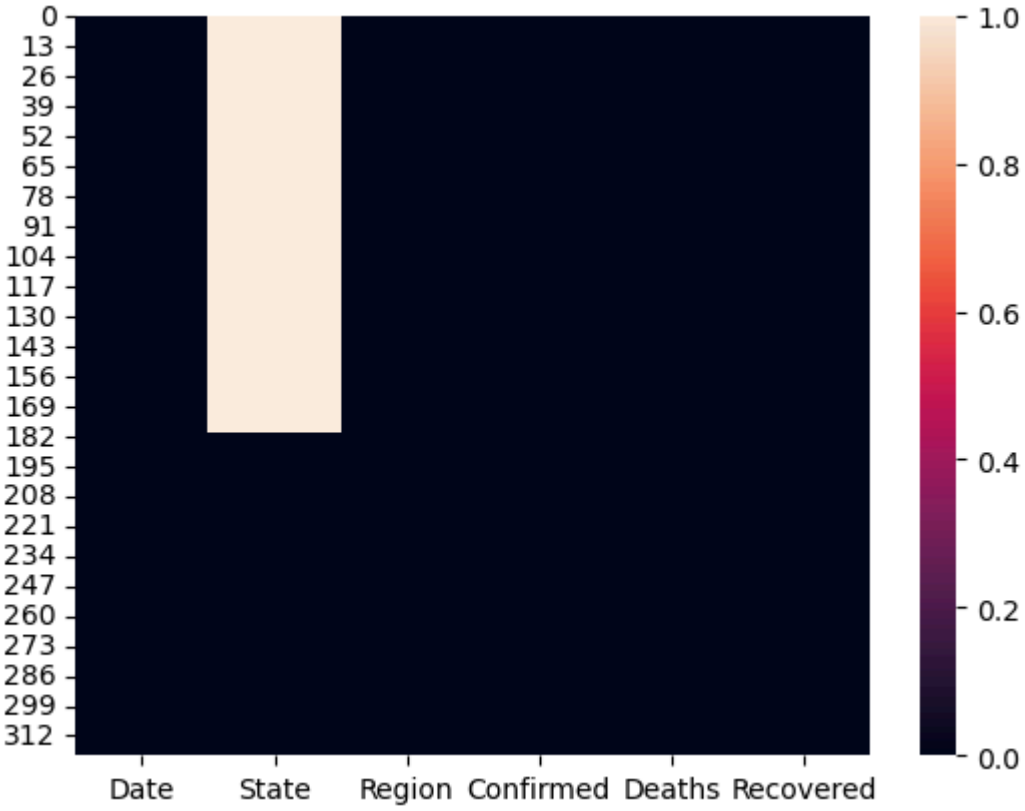
In [36]:
```
df.isnull().sum() ## Missing Value
```

Out[36]:
```
Date           0
State        181
Region         0
Confirmed      0
Deaths         0
Recovered      0
dtype: int64
```

In [37]:
```
# Get the null values in the form of Heatmap using seaborn, matplotlib

import matplotlib.pyplot as plt
import seaborn as sns
```

In [38]:
```
sns.heatmap(df.isnull())
plt.show()
```



In [39]:
```
# Show the number of confirmed, Deaths and Recovered cases in each region.

df.head(2)
```

Out[39]:

	Date	State	Region	Confirmed	Deaths	Recovered
0	4/29/2020	NaN	Afghanistan	1939	60	252
1	4/29/2020	NaN	Albania	766	30	455

In [40]:
```
df.groupby("Region").sum().head(10)
```

Out[40]:

Region	Date	State	Confirmed
Afghanistan	4/29/2020	0	1939
Albania	4/29/2020	0	766
Algeria	4/29/2020	0	3848
Andorra	4/29/2020	0	743
Angola	4/29/2020	0	27
Antigua and Barbuda	4/29/2020	0	24
Argentina	4/29/2020	0	4285
Armenia	4/29/2020	0	1932
Australia	4/29/20204/29/20204/29/20204/29/20204/29/20204...	Australian Capital TerritoryNew South WalesNor...	6752
Austria	4/29/2020	0	15402

In [41]:
```
df.groupby("Region")["Confirmed"].sum().sort_values(ascending=False).head()
```

Out[41]:
```
Region
US        1039909
Spain      236899
Italy      203591
France     166543
UK         166441
Name: Confirmed, dtype: int64
```

In [42]:
```
# Get the confirmed and recovered data

df.groupby("Region")[["Confirmed","Recovered"]].sum()
```

Out[42]:

Region	Confirmed	Recovered
Afghanistan	1939	252
Albania	766	455
Algeria	3848	1702
Andorra	743	423
Angola	27	7
...	...	...
West Bank and Gaza	344	71
Western Sahara	6	5
Yemen	6	1
Zambia	97	54
Zimbabwe	32	5

187 rows × 2 columns

In [43]:
```
# Remove the records where Confirmed cases is less than 10

df.head(2)
```

Out[43]:

	Date	State	Region	Confirmed	Deaths	Recovered
0	4/29/2020	NaN	Afghanistan	1939	60	252
1	4/29/2020	NaN	Albania	766	30	455

In [44]:
```
df.Confirmed
```

Out[44]:
```
0      1939
1       766
2      3848
3       743
4        27
       ...
316     545
317      76
318      11
319     185
320    1268
Name: Confirmed, Length: 321, dtype: int64
```

In [45]:
```
df.Confirmed<10
```

Out[45]:
```
0      False
1      False
2      False
3      False
4      False
       ...
316    False
317    False
318    False
319    False
320    False
Name: Confirmed, Length: 321, dtype: bool
```

In [46]:
```
df[df.Confirmed<10]
```

Out[46]:

	Date	State	Region	Confirmed	Deaths	Recovered
18	4/29/2020	NaN	Bhutan	7	0	5
98	4/29/2020	NaN	MS Zaandam	9	2	0
105	4/29/2020	NaN	Mauritania	8	1	6
126	4/29/2020	NaN	Papua New Guinea	8	0	0
140	4/29/2020	NaN	Sao Tome and Principe	8	0	4
177	4/29/2020	NaN	Western Sahara	6	0	5
178	4/29/2020	NaN	Yemen	6	0	1
184	4/29/2020	Anguilla	UK	3	0	3
192	4/29/2020	Bonaire, Sint Eustatius and Saba	Netherlands	5	0	0
194	4/29/2020	British Virgin Islands	UK	6	1	3
203	4/29/2020	Diamond Princess cruise ship	Canada	0	1	0
272	4/29/2020	Northwest Territories	Canada	5	0	0
284	4/29/2020	Recovered	Canada	0	0	20327
285	4/29/2020	Recovered	US	0	0	120720
288	4/29/2020	Saint Barthelemy	France	6	0	6
289	4/29/2020	Saint Pierre and Miquelon	France	1	0	0
305	4/29/2020	Tibet	Mainland China	1	0	1

Now remove the above outcome from the data

In [47]:
```
df=df[~(df.Confirmed<10)]   # we can use ~ to remove the record permanently
```

In [48]:
```
df.head()
```

Out[48]:

	Date	State	Region	Confirmed	Deaths	Recovered
0	4/29/2020	NaN	Afghanistan	1939	60	252
1	4/29/2020	NaN	Albania	766	30	455
2	4/29/2020	NaN	Algeria	3848	444	1702
3	4/29/2020	NaN	Andorra	743	42	423
4	4/29/2020	NaN	Angola	27	2	7

In [49]:
```
df[df.Confirmed<10] # to verify
```

Out[49]:

	Date	State	Region	Confirmed	Deaths	Recovered

In Which region, maximum number of Confirmed cases were recorded?

In [50]:
```
df.groupby("Region")["Confirmed"].sum().head()
```

Out[50]:
```
Region
Afghanistan    1939
Albania         766
Algeria        3848
Andorra         743
Angola           27
Name: Confirmed, dtype: int64
```

In [51]:
```
 #  Top 20 region
df.groupby("Region")['Confirmed'].sum().sort_values(ascending=False).head(20)
```

Out[51]:
```
Region
US                1039909
Spain              236899
Italy              203591
France             166536
UK                 166432
Germany            161539
Turkey             117589
Russia              99399
Iran                93657
Mainland China      82861
Brazil              79685
Canada              52860
Belgium             47859
Netherlands         38993
Peru                33931
India               33062
Switzerland         29407
Ecuador             24675
Portugal            24505
Saudi Arabia        21402
Name: Confirmed, dtype: int64
```

In which region, minimum number of Deaths cases were recorded?

In [52]:
```
# Top 50 region

df.groupby("Region").Deaths.sum().sort_values(ascending = True).head(50)
```

Out[52]:

Region	
Cambodia	0
Fiji	0
Dominica	0
Central African Republic	0
Eritrea	0
Laos	0
Holy See	0
Nepal	0
Madagascar	0
Macau	0
Mozambique	0
Mongolia	0
Namibia	0
Grenada	0
Saint Lucia	0
Saint Vincent and the Grenadines	0
Timor-Leste	0
Uganda	0
Seychelles	0
South Sudan	0
Rwanda	0
Saint Kitts and Nevis	0
Vietnam	0
Liechtenstein	1
Benin	1
Gambia	1
Eswatini	1
Equatorial Guinea	1
Guinea-Bissau	1
Maldives	1
Cabo Verde	1
Botswana	1
Burundi	1
Brunei	1
Suriname	1
Djibouti	2
Chad	2
West Bank and Gaza	2
Angola	2
Libya	2
Belize	2
Malawi	3
Ethiopia	3
Syria	3
Zambia	3
Nicaragua	3
Gabon	3
Antigua and Barbuda	3
Monaco	4
Zimbabwe	4

Name: Deaths, dtype: int64

How many Confirmed, Deaths & Recovered cases where reported from India till 29 april 2020

In [53]:
```
df[df.Region == 'India']
```

Out[53]:

	Date	State	Region	Confirmed	Deaths	Recovered
74	4/29/2020	NaN	India	33062	1079	8437

Sort the entire data wrt No. of Confirmed cases in ascending order?

In [55]:
```
df.sort_values(by=["Confirmed"], ascending=True)
```

Out[55]:

	Date	State	Region	Confirmed	Deaths	Recovered
70	4/29/2020	NaN	Holy See	10	0	2
59	4/29/2020	NaN	Gambia	10	1	8
156	4/29/2020	NaN	Suriname	10	1	8
27	4/29/2020	NaN	Burundi	11	1	4
217	4/29/2020	Greenland	Denmark	11	0	11
...	...	...	...	...	...	...
57	4/29/2020	NaN	France	165093	24087	48228
168	4/29/2020	NaN	UK	165221	26097	0
80	4/29/2020	NaN	Italy	203591	27682	71252
153	4/29/2020	NaN	Spain	236899	24275	132929
265	4/29/2020	New York	US	299691	23477	0

304 rows × 6 columns

Sort the entire data wrt No. of Recovered cases in descending order?

In [58]:
```
df.sort_values(by=['Recovered'], ascending=False)
```

Out[58]:

	Date	State	Region	Confirmed	Deaths	Recovered
153	4/29/2020	NaN	Spain	236899	24275	132929
61	4/29/2020	NaN	Germany	161539	6467	120400
76	4/29/2020	NaN	Iran	93657	5957	73791
80	4/29/2020	NaN	Italy	203591	27682	71252
229	4/29/2020	Hubei	Mainland China	68128	4512	63616
...	...	...	...	...	...	...
270	4/29/2020	Northern Mariana Islands	US	14	2	0
299	4/29/2020	South Dakota	US	2373	13	0
298	4/29/2020	South Carolina	US	5882	231	0
302	4/29/2020	Tennessee	US	10366	195	0
303	4/29/2020	Texas	US	27257	754	0

304 rows × 6 columns

In this project, a mini dataset related to the covid-19 pandemic is taken and analysed in a very Easy to understand language.

In [ ]: