

In [1]:

```
# ----- Start of the project -----#  
# ----- Visualizing the spread of CoronaVirus in six countries using python -----#  
  
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#Step 1 :- Import useful libraries for the project  
  
%matplotlib notebook  
import pandas as pd  
import matplotlib.pyplot as plt  
import matplotlib.animation as animation  
from time import sleep
```

In [2]:

```
# Step 2:- Download the data Set  
URL_DATASET = r'https://raw.githubusercontent.com/datasets/covid-19/master/data/countries-aggregated.csv'  
df = pd.read_csv(URL_DATASET, usecols = ['Date', 'Country', 'Confirmed'])  
  
# to see the information about data set, run following command  
print(df.info())
```

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 34968 entries, 0 to 34967  
Data columns (total 3 columns):  
Date           34968 non-null object  
Country        34968 non-null object  
Confirmed      34968 non-null int64  
dtypes: int64(1), object(2)  
memory usage: 819.7+ KB  
None
```

In [3]:

```
# Step 3 :- Create a list containing of all the dates
list_of_dates = df['Date'].unique()

# To see the dates, run the following commands
print(list_of_dates)
```

```
['2020-01-22' '2020-01-23' '2020-01-24' '2020-01-25' '2020-01-26'
 '2020-01-27' '2020-01-28' '2020-01-29' '2020-01-30' '2020-01-31'
 '2020-02-01' '2020-02-02' '2020-02-03' '2020-02-04' '2020-02-05'
 '2020-02-06' '2020-02-07' '2020-02-08' '2020-02-09' '2020-02-10'
 '2020-02-11' '2020-02-12' '2020-02-13' '2020-02-14' '2020-02-15'
 '2020-02-16' '2020-02-17' '2020-02-18' '2020-02-19' '2020-02-20'
 '2020-02-21' '2020-02-22' '2020-02-23' '2020-02-24' '2020-02-25'
 '2020-02-26' '2020-02-27' '2020-02-28' '2020-02-29' '2020-03-01'
 '2020-03-02' '2020-03-03' '2020-03-04' '2020-03-05' '2020-03-06'
 '2020-03-07' '2020-03-08' '2020-03-09' '2020-03-10' '2020-03-11'
 '2020-03-12' '2020-03-13' '2020-03-14' '2020-03-15' '2020-03-16'
 '2020-03-17' '2020-03-18' '2020-03-19' '2020-03-20' '2020-03-21'
 '2020-03-22' '2020-03-23' '2020-03-24' '2020-03-25' '2020-03-26'
 '2020-03-27' '2020-03-28' '2020-03-29' '2020-03-30' '2020-03-31'
 '2020-04-01' '2020-04-02' '2020-04-03' '2020-04-04' '2020-04-05'
 '2020-04-06' '2020-04-07' '2020-04-08' '2020-04-09' '2020-04-10'
 '2020-04-11' '2020-04-12' '2020-04-13' '2020-04-14' '2020-04-15'
 '2020-04-16' '2020-04-17' '2020-04-18' '2020-04-19' '2020-04-20'
 '2020-04-21' '2020-04-22' '2020-04-23' '2020-04-24' '2020-04-25'
 '2020-04-26' '2020-04-27' '2020-04-28' '2020-04-29' '2020-04-30'
 '2020-05-01' '2020-05-02' '2020-05-03' '2020-05-04' '2020-05-05'
 '2020-05-06' '2020-05-07' '2020-05-08' '2020-05-09' '2020-05-10'
 '2020-05-11' '2020-05-12' '2020-05-13' '2020-05-14' '2020-05-15'
 '2020-05-16' '2020-05-17' '2020-05-18' '2020-05-19' '2020-05-20'
 '2020-05-21' '2020-05-22' '2020-05-23' '2020-05-24' '2020-05-25'
 '2020-05-26' '2020-05-27' '2020-05-28' '2020-05-29' '2020-05-30'
 '2020-05-31' '2020-06-01' '2020-06-02' '2020-06-03' '2020-06-04'
 '2020-06-05' '2020-06-06' '2020-06-07' '2020-06-08' '2020-06-09'
 '2020-06-10' '2020-06-11' '2020-06-12' '2020-06-13' '2020-06-14'
 '2020-06-15' '2020-06-16' '2020-06-17' '2020-06-18' '2020-06-19'
 '2020-06-20' '2020-06-21' '2020-06-22' '2020-06-23' '2020-06-24'
 '2020-06-25' '2020-06-26' '2020-06-27' '2020-06-28' '2020-06-29'
 '2020-06-30' '2020-07-01' '2020-07-02' '2020-07-03' '2020-07-04'
 '2020-07-05' '2020-07-06' '2020-07-07' '2020-07-08' '2020-07-09'
 '2020-07-10' '2020-07-11' '2020-07-12' '2020-07-13' '2020-07-14'
 '2020-07-15' '2020-07-16' '2020-07-17' '2020-07-18' '2020-07-19'
 '2020-07-20' '2020-07-21' '2020-07-22' '2020-07-23' '2020-07-24'
 '2020-07-25']
```

In [4]:

```
# Step 4 :- Pick some countries about which you want to focus.
# Also create an ax object

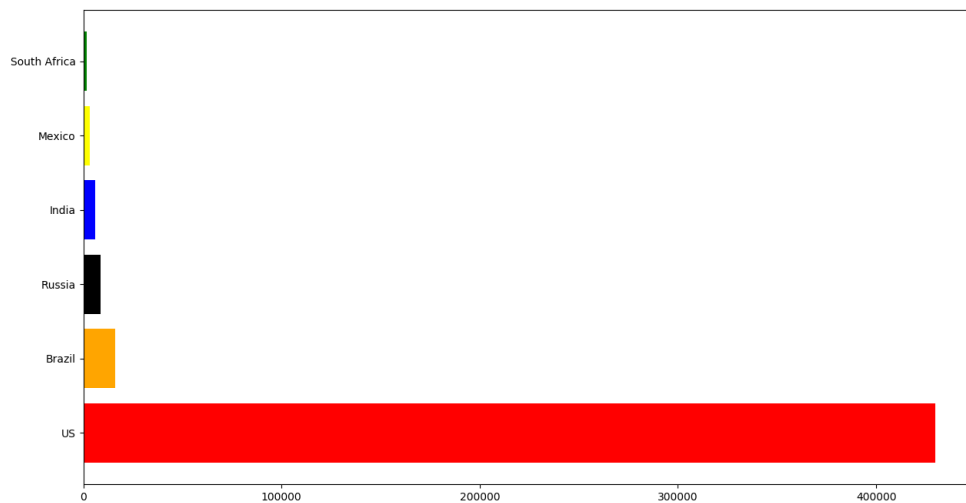
fig, ax = plt.subplots(figsize=(15, 8))

# Where the virus is spreading a lot, we will animate only for those six countries.

list_of_countries = ['US', 'Brazil', 'India', 'Russia', 'South Africa', 'Mexico']

# List of colors for the 6 horizontal bars are as follows

list_of_colors = ['red', 'orange', 'black', 'blue', 'yellow', 'green']
```



In [5]:

```
# Step 5 :- Write the call back (plot_bar_graph) function which will used in the FuncAn
imation class object

def plot_bar_graph(some_date):
    df3 = df[df['Date'].eq(some_date)]
    ax.clear()

    # Only take Confirmed column in descending order
    df4 = df3.sort_values(by = 'Confirmed', ascending = False)

    # Select the top 6 Confirmed countries
    df4 = df4[df4['Country'].isin(list_of_countries)]

    sleep(0.3) # used to slow down the animation

    return ax.barh(df4['Country'], df4['Confirmed'], color= list_of_colors)
```

In [6]:

```
# Step 6 :- Now create a FuncAnimation object
covid_animation = animation.FuncAnimation(fig = fig, func = plot_bar_graph,
                                          frames= list_of_dates, blit=True,
                                          interval=20)
```

In [7]:

```
# Step 7 :- Finally save the animation to a video file of mp4 format

# Set the path where you want to save the video file.

my_path = r'C:\Users\lenovo\Desktop\covid_visualization.mp4'

covid_animation.save(filename = my_path, writer = 'ffmpeg', fps=30,
                     extra_args= ['-vcodec', 'libx264', '-pix_fmt', 'yuv420p'])

plt.show()

# ----- End of the project -----#
```

In []: