```
import numpy as np
import pandas as pd
from matplotlib import pyplot as plt


import json
import csv

with open('states_daily.json') as json_file:
    data = json.load(json_file)


covid_data = data['states_daily']

data_file = open('data_file.csv', 'w')

csv_writer = csv.writer(data_file)

count = 0

for x in covid_data:
    if count == 0:

        header = x.keys()
        csv_writer.writerow(header)
        count += 1

    csv_writer.writerow(x.values())

data_file.close()


covid = pd.read_csv('data_file.csv')


covid = pd.DataFrame(covid, columns=["date","dateymd","status","tt","an","ap","ar"


uts = ['dl','an','dn','cg','ld','py','la','jk']
```

Question 1.1

```
con = result[(result['status'] == "Confirmed")]['tt'].sum()


rec = result[(result['status'] == "Recovered")]['tt'].sum()


dec = result[(result['status'] == "Deceased ")]['tt'].sum()


print("Confirmed : {}".format(con) +", "+ "Recovered : {}".format(rec)+", "+"Decea
```

```
Confirmed : 3985115, Recovered : 3851085, Deceased : 0
```

Question 1.2

```
con_dl = result[(result['status'] == "Confirmed")]['dl'].sum()

rec_dl = result[(result['status'] == "Recovered")]['dl'].sum()


dec_dl = result[(result['status'] == "Deceased  ")]['dl'].sum()

print("Delhi Confirmed : {}".format(con_dl) +", "+ "Recovered : {}".format(rec_dl)+
```

```
Delhi Confirmed : 186202, Recovered : 176254, Deceased : 0
```

```
con_mh = result[(result['status'] == "Confirmed")]['mh'].sum()

rec_mh = result[(result['status'] == "Recovered")]['mh'].sum()

dec_mh = result[(result['status'] == "Deceased  ")]['mh'].sum()

print("Maharashtra Confirmed : {}".format(con_mh) +", "+ "Recovered : {}".format(r
```

```
Maharashtra Confirmed : 776020, Recovered : 771786, Deceased : 0
```

```
con_wb = result[(result['status'] == "Confirmed")]['wb'].sum()

rec_wb = result[(result['status'] == "Recovered")]['wb'].sum()

dec_wb = result[(result['status'] == "Deceased  ")]['wb'].sum()

print("West Bengal Confirmed : {}".format(con_wb) +", "+ "Recovered : {}".format(r
```

```
West Bengal Confirmed : 191975, Recovered : 169305, Deceased : 0
```

```
con_tn = result[(result['status'] == "Confirmed")]['tn'].sum()

rec_tn = result[(result['status'] == "Recovered")]['tn'].sum()

dec_tn = result[(result['status'] == "Deceased  ")]['tn'].sum()
```

```
print("Tamil Nadu Confirmed : {}".format(con_tn) +", "+ "Recovered : {}".format(re
```

```
Tamil Nadu Confirmed : 313324, Recovered : 289304, Deceased : 0
```

Question 1.3

```
us","tt","an","ap","ar","as","br","ch","ct","dd","dl","dn","ga","gj","hp","hr","jh"
```

```
Confi = Covid[(Covid['status'] == "Confirmed")]
```

```
Confi = Confi.iloc[:,4:]
```

```
temp_rate = pd.DataFrame(columns = ['State','confirm_cases'])
```

```
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  con_cases = columnData.values.sum()
  temp_rate = temp_rate.append({'State':state,'confirm_cases':con_cases},ignore_in
```

```
Confi = Covid[(Covid['status'] == "Recovered")]
```

```
Confi = Confi.iloc[:,4:]
```

```
recovery_rate = pd.DataFrame(columns = ['State','Recovery_rate'])
```

```
i=0
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  rec_cases = columnData.values.sum()
  act_cases = temp_rate.iloc[i]['confirm_cases']
  if(act_cases == 0):
    rate = 0.0
  else:
    rate = rec_cases/act_cases
  i=i+1
  recovery_rate = recovery_rate.append({'State':state,'Recovery_rate':rate},ignore_
```

```
high_rate = recovery_rate.sort_values(by=['Recovery_rate'], ascending=False)
```

```
highest_rate = high_rate.iloc[0:10, :]
```

```
highest_rate
```

	State	Recovery_rate
22	rj	0.990425
8	gj	0.987567
17	mp	0.986606
10	hr	0.986592
28	up	0.986422
3	br	0.986407
4	ch	0.986233
5	ct	0.985370
11	jh	0.984637
0	ap	0.984519

```
low_rate = recovery_rate.sort_values(by=['Recovery_rate'])
```

```
lowest_rate = low_rate.iloc[0:10, :]
```

```
lowest_rate
```

	State	Recovery_rate
6	dd	0.000000
27	un	0.000000
18	mz	0.813923
23	sk	0.905324
19	nl	0.912305
16	mn	0.926487
15	ml	0.929457
13	kl	0.948274
1	ar	0.959448
29	ut	0.959831

Question 1.4

```
Confi = Covid[(Covid['status'] == "Confirmed")]
```

```
Confi = Confi.iloc[:,4:]


confirmed_df = pd.DataFrame(columns = ['State','confirm_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  con_cases = columnData.values.sum()
  confirmed_df = confirmed_df.append({'State':state,'confirm_cases':con_cases},ign



confirmed_df = confirmed_df.sort_values(by=['confirm_cases'], ascending=False)


highest_affected = confirmed_df.iloc[0:3, :]


highest_affected
```

	State	confirm_cases
14	mh	6396805
13	kl	3702417
12	ka	2930529

```
Confi = Covid[(Covid['status'] == "Recovered")]
Confi = Confi.iloc[:,4:]
recovered_df = pd.DataFrame(columns = ['State','recover_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  rec_cases = columnData.values.sum()
  recovered_df = recovered_df.append({'State':state,'recover_cases':rec_cases},ign
recovered_df = recovered_df.sort_values(by=['recover_cases'], ascending=False)
Rec_highest_affected = recovered_df.iloc[0:3, :]
Rec_highest_affected
```

	State	recover_cases
14	mh	6195744
13	kl	3510904
12	ka	2871449

```
Confi = Covid[(Covid['status'] == "Deceased")]
Confi = Confi.iloc[:,4:]
deceased_df = pd.DataFrame(columns = ['State','dec_cases'])
for (columnName, columnData) in Confi.iteritems():
```

```
  state = columnName
  if state in uts :
    continue
  ddec_cases = columnData.values.sum()
  deceased_df = deceased_df.append({'State':state,'dec_cases':ddec_cases},ignore_i
deceased_df = deceased_df.sort_values(by=['dec_cases'], ascending=False)
Dec_highest_affected = deceased_df.iloc[0:3, :]
Dec_highest_affected
```

	State	dec_cases
14	mh	135138
12	ka	37014
25	tn	34547

Question 1.5

```
Confi = Covid[(Covid['status'] == "Confirmed")]
Confi = Confi.iloc[:,4:]
confirmed_df = pd.DataFrame(columns = ['State','confirm_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  con_cases = columnData.values.sum()
  confirmed_df = confirmed_df.append({'State':state,'confirm_cases':con_cases},ign
confirmed_df = confirmed_df.sort_values(by=['confirm_cases'])
lowest_affected = confirmed_df.iloc[0:3, :]
lowest_affected
```

	State	confirm_cases
27	un	0
6	dd	0
23	sk	28740

```
Confi = Covid[(Covid['status'] == "Recovered")]
Confi = Confi.iloc[:,4:]
recovered_df = pd.DataFrame(columns = ['State','recover_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  rec_cases = columnData.values.sum()
  recovered_df = recovered_df.append({'State':state,'recover_cases':rec_cases},ign
recovered_df = recovered_df.sort_values(by=['recover_cases'])
Rec_lowest_affected = recovered_df.iloc[0:3, :]
Rec_lowest_affected
```

	State	recover_cases
27	un	0
6	dd	0
23	sk	26019

```
Confi = Covid[(Covid['status'] == "Deceased")]
Confi = Confi.iloc[:,4:]
deceased_df = pd.DataFrame(columns = ['State','dec_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  if state in uts :
    continue
  ddec_cases = columnData.values.sum()
  deceased_df = deceased_df.append({'State':state,'dec_cases':ddec_cases},ignore_i
deceased_df = deceased_df.sort_values(by=['dec_cases'])
Dec_lowest_affected = deceased_df.iloc[0:3, :]
Dec_lowest_affected
```

	State	dec_cases
6	dd	0
27	un	0
18	mz	184

Question 1.7

```
Covid = pd.DataFrame(covid, columns=["date","dateymd","status","tt","an","ap","ar"
```

```
Confi = Covid[(Covid['status'] == "Confirmed")]
```

```
Confi = Confi.iloc[:,4:]
```

```
temp_confirm = pd.DataFrame(columns = ['State','confirm_cases'])
```

```
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  con_cases = columnData.values.sum()
  temp_confirm = temp_confirm.append({'State':state,'confirm_cases':con_cases},ign
```

```
Confi·=·Covid[(Covid['status']·==·"Recovered")]
```

```
Confi·=·Confi.iloc[:,4:]
```

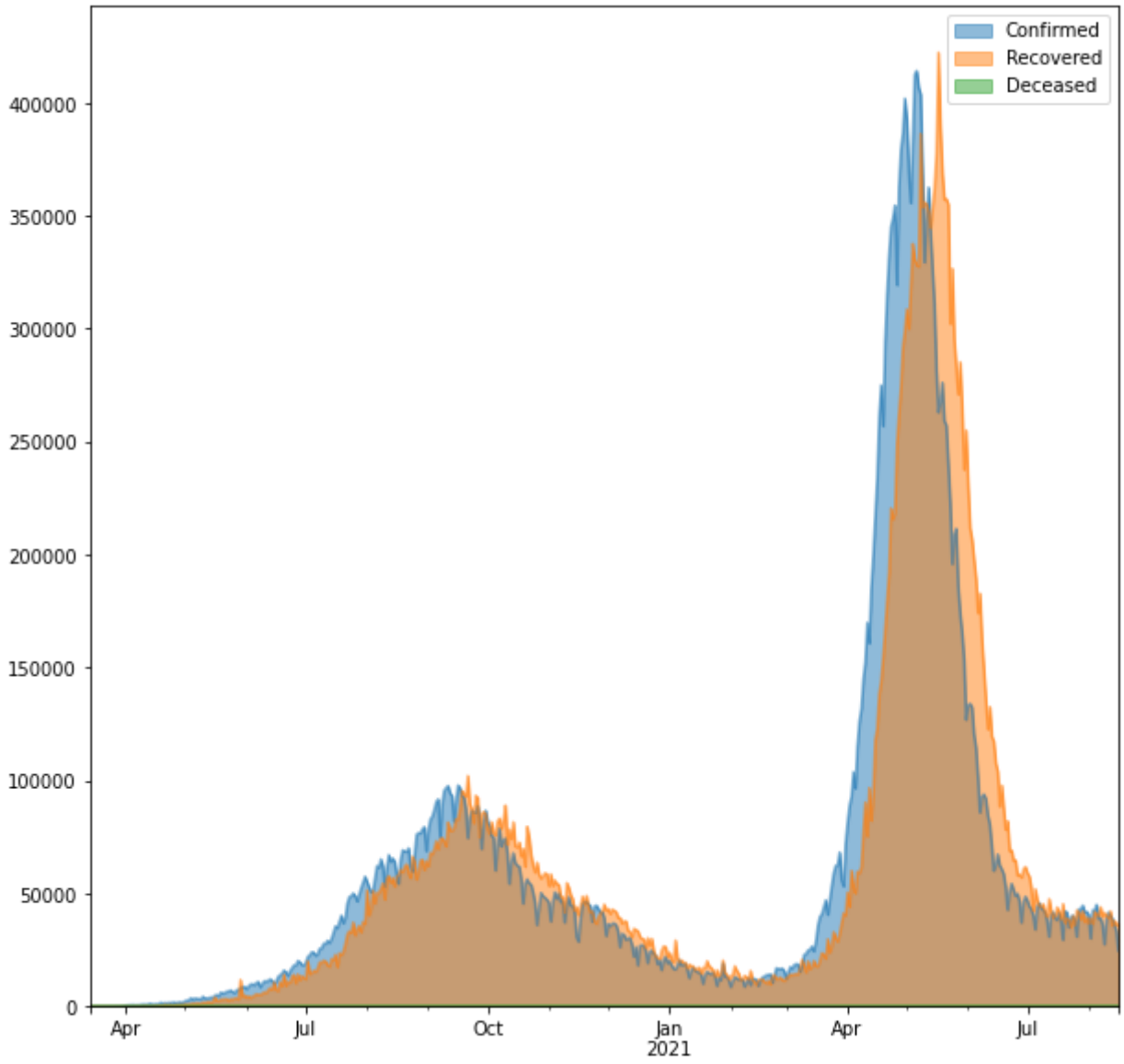
```
Confi = Confi.iloc[:,4:]


temp_recov = pd.DataFrame(columns = ['State','recov_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  con_cases = columnData.values.sum()
  temp_recov = temp_recov.append({'State':state,'recov_cases':con_cases},ignore_in



Confi = Covid[(Covid['status'] == "Deceased")]
Confi = Confi.iloc[:,4:]
temp_desc = pd.DataFrame(columns = ['State','desc_cases'])
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  con_cases = columnData.values.sum()
  temp_desc = temp_desc.append({'State':state,'desc_cases':con_cases},ignore_index


active_df = pd.DataFrame(columns = ['State','Active_cases'])


i=0
for (columnName, columnData) in Confi.iteritems():
  state = columnName
  confirm_cases = temp_confirm.iloc[i]['confirm_cases']
  rec_cases = temp_recov.iloc[i]['recov_cases']
  dec_cases = temp_desc.iloc[i]['desc_cases']
  act_cases = confirm_cases - (rec_cases + dec_cases)
  i=i+1
  active_df = active_df.append({'State':state,'Active_cases':act_cases},ignore_ind


active_df
```

	State	Active_cases
0	an	6
1	ap	17218
2	ar	1837
3	as	8947
4	br	213
5	ch	43
6	ct	1138
7	dd	0
8	dl	467
9	dn	-18
10	ga	873
11	gj	183
12	hp	2716
13	hr	667
14	jh	209
15	jk	1229
16	ka	22066
17	kl	172769
18	la	13
19	ld	79
20	mh	65923
21	ml	3852
22	mn	6263
23	mp	93
24	mz	8880
25	nl	1958

Question 2.1

```
df = pd.DataFrame(columns = ['Confirmed','Recovered','Deceased'])
con = list();
Plotter·=·Covid.iloc[:,:4]
idx = Plotter.index
rows = len(idx)-2
for i in range(0,rows,3):
  confirm = Plotter.iloc[i]['tt']
```

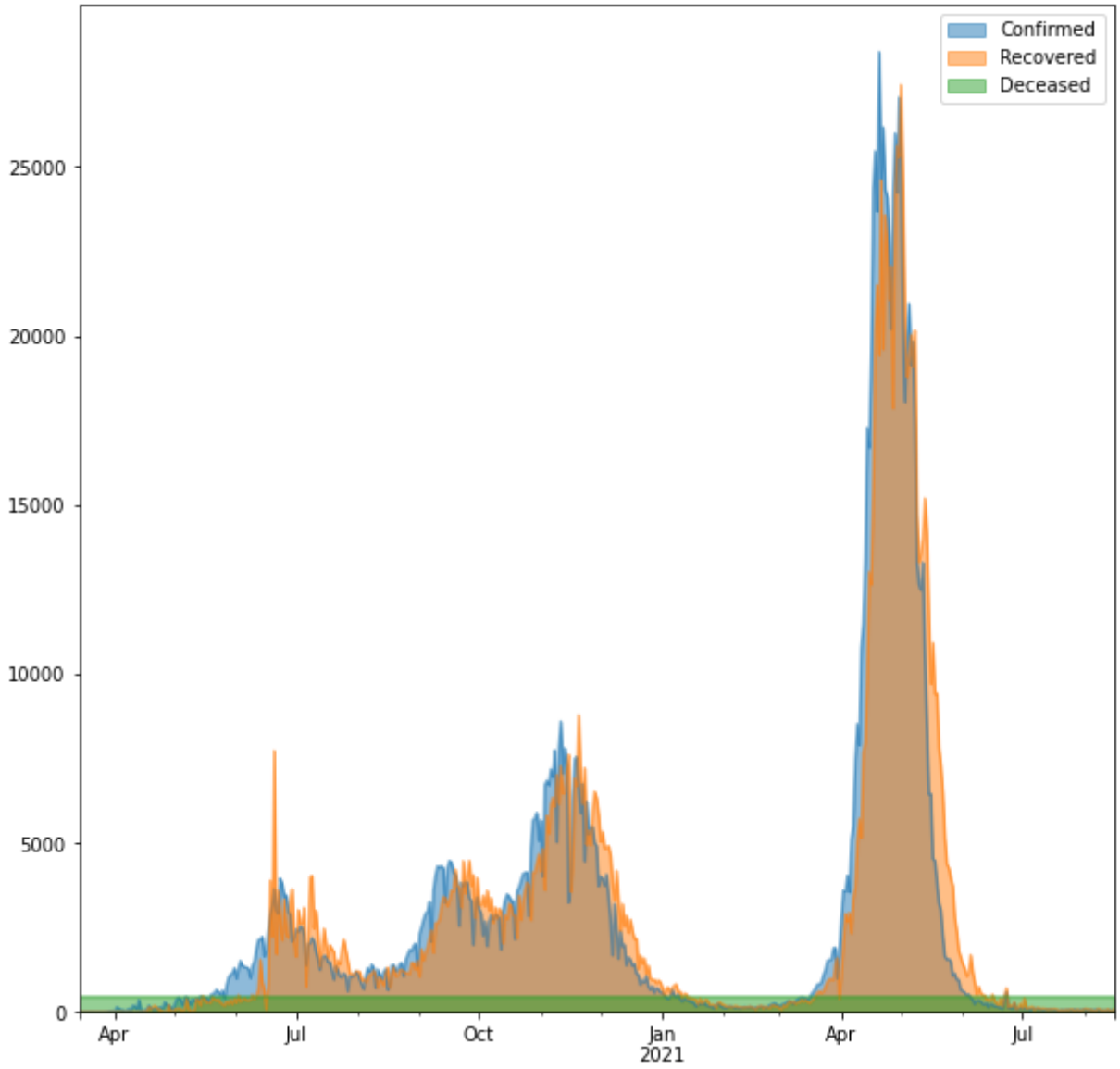
```
    confirm = Plotter.iloc[i]['tt']
    recov = Plotter.iloc[i+1]['tt']
    desc = Plotter.iloc[i+2]['tt']
    array = [confirm, recov, deceas]
    con.append(array)

df = pd.DataFrame(data=con, columns = ['Confirmed','Recovered','Deceased'], index=
                        freq='D'))

df.plot.area(stacked=False,figsize=(10, 10));
plt.show()
```



Question 2.2

```
df·=·pd.DataFrame(columns·=·['Confirmed','Recovered','Deceased'])
Plotter·=·Covid
con·=·list();
idx·=·Plotter.index
rows·=·len(idx)-2
for·i·in·range(0,rows,3):
··confirm·=·Plotter.iloc[i]['dl']
```

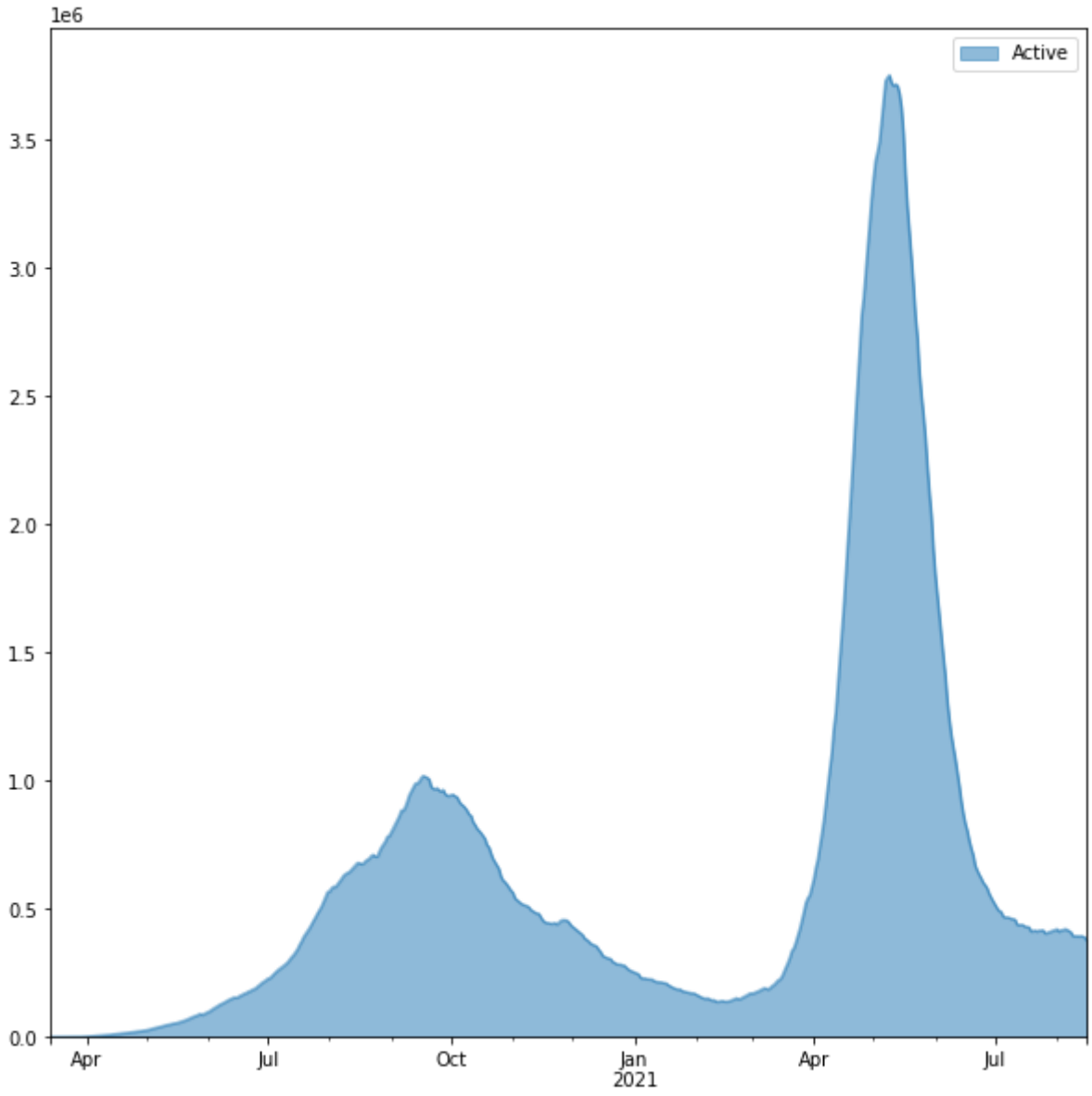
```
  ··recov·=·Plotter.iloc[i+1]['dl']
  ··desc·=·Plotter.iloc[i+2]['dl']
  ··array·=·[confirm,·recov,·deceas]
  ··con.append(array)
  ··
  df·=·pd.DataFrame(data=con,·columns·=·['Confirmed','Recovered','Deceased'],·index=
  ·····················freq='D'))
  ·····················
  df.plot.area(stacked=False,figsize=(10,·10));
  plt.show()
```



Question 2.3

```
Plotter = Covid
con = []
idx = Plotter.index
rows = len(idx)-2
for i in range(0,rows,3):
  confirm = Plotter.iloc[i]['tt']
```

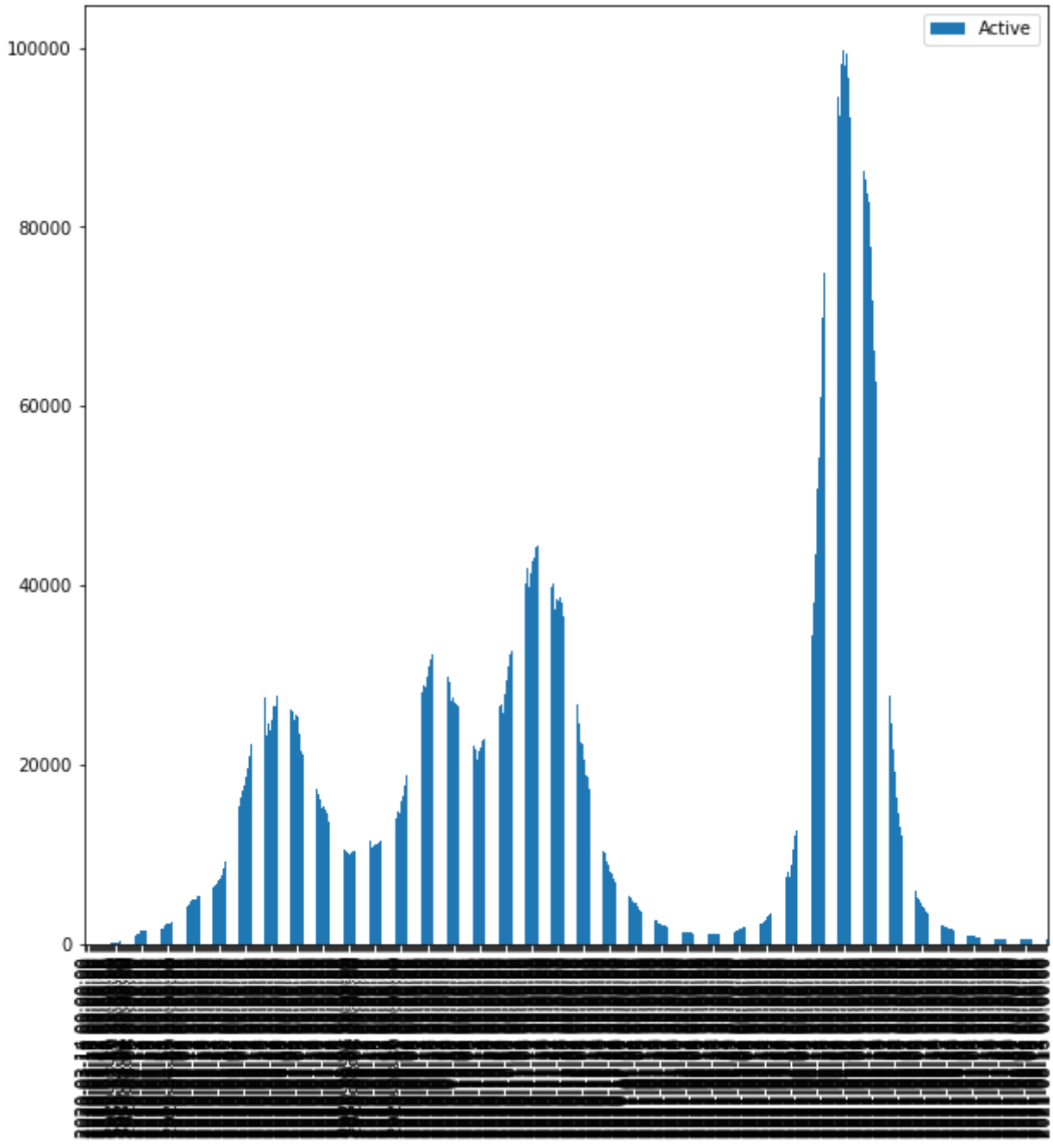
```
    recov = Plotter.iloc[i+1]['tt']
    desc = Plotter.iloc[i+2]['tt']
    Active = confirm-(recov+desc)
    if i>0:
      Active = Active+con[-1]
    con.append(Active)

df = pd.DataFrame(data=con, columns = ['Active'], index=pd.date_range(start='2020/(
                        freq='D'))

df.plot.area(stacked=False,figsize=(10, 10));
plt.show()
```



Question 2.4

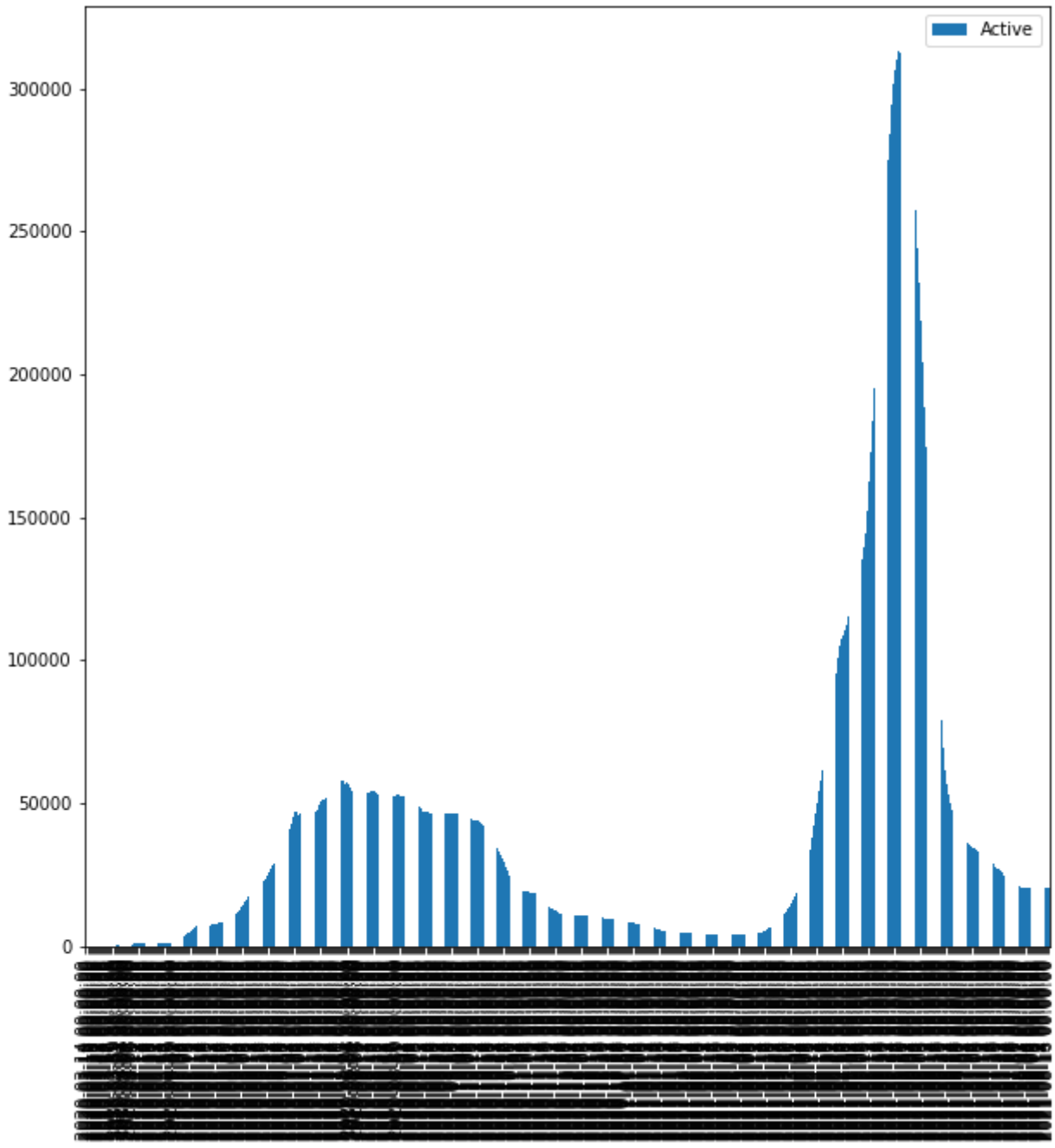
```
Plotter·=·Covid
con·=·[]
idx·=·Plotter.index
rows·=·len(idx)-2
for·i·in·range(0,rows,3):
```

```
for i in range(0,rows,3):
  confirm = Plotter.iloc[i]['dl']
  recov = Plotter.iloc[i+1]['dl']
  desc = Plotter.iloc[i+2]['dl']
  Active = confirm-(recov+desc)
  if i>0:
    Active = Active+con[-1]
  con.append(Active)
  
df = pd.DataFrame(data=con, columns = ['Active'], index=pd.date_range(start='2020/(
                      freq='D'))
.......................
df.plot.bar(stacked=True,figsize=(10, 10));
```



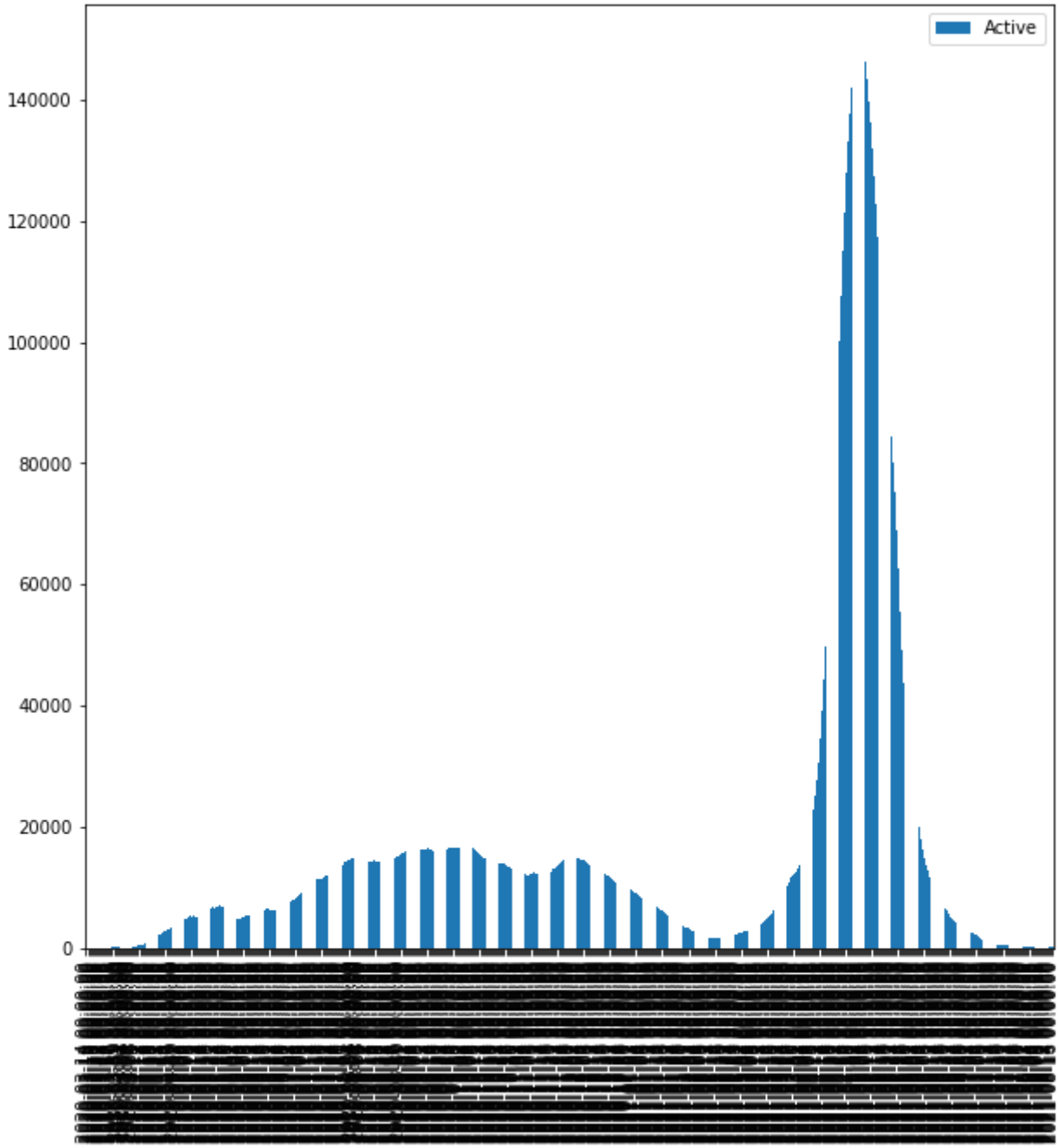

```
Plotter = Covid
con = []
idx = Plotter.index
rows = len(idx)-2
```

```
for i in range(0,rows,3):
  confirm = Plotter.iloc[i]['tn']
  recov = Plotter.iloc[i+1]['tn']
  desc = Plotter.iloc[i+2]['tn']
  Active = confirm-(recov+desc)
  if i>0:
    Active = Active+con[-1]
  con.append(Active)

df = pd.DataFrame(data=con, columns = ['Active'], index=pd.date_range(start='2020/
                        freq='D'))

df.plot.bar(stacked=True,figsize=(10, 10));
```




```
Plotter = Covid
con = []
idx = Plotter.index
rows = len(idx)-2
```

```
for i in range(0,rows,3):
  confirm = Plotter.iloc[i]['gj']
  recov = Plotter.iloc[i+1]['gj']
  desc = Plotter.iloc[i+2]['gj']
  Active = confirm-(recov+desc)
  if i>0:
    Active = Active+con[-1]
  con.append(Active)

df = pd.DataFrame(data=con, columns = ['Active'], index=pd.date_range(start='2020/
                        freq='D'))

df.plot.bar(stacked=True,figsize=(10, 10));
```



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