Date - 17/10/2023

Team ID - 720

Project Title - Covid-19 Cases Analysis

Importing the dependencies

In [81]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [57]:
```
data = pd.read_csv("Covid_19_cases4.csv")
```

In [58]:
```
data
```

Out[58]:

	dateRep	day	month	year	cases	deaths	countriesAndTerritories
0	31-05-2021	31	5	2021	366	5	Austria
1	30-05-2021	30	5	2021	570	6	Austria
2	29-05-2021	29	5	2021	538	11	Austria
3	28-05-2021	28	5	2021	639	4	Austria
4	27-05-2021	27	5	2021	405	19	Austria
...	...	...	...	...	...	...	...
2725	06-03-2021	6	3	2021	3455	17	Sweden
2726	05-03-2021	5	3	2021	4069	12	Sweden
2727	04-03-2021	4	3	2021	4884	14	Sweden
2728	03-03-2021	3	3	2021	4876	19	Sweden
2729	02-03-2021	2	3	2021	6191	19	Sweden

2730 rows × 7 columns

EXPLORING THE DATASET

1. Displaying the top 5 rows

In [59]:
```
data.head()
```

Out[59]:

	dateRep	day	month	year	cases	deaths	countriesAndTerritories
0	31-05-2021	31	5	2021	366	5	Austria

	dateRep	day	month	year	cases	deaths	countriesAndTerritories
1	30-05-2021	30	5	2021	570	6	Austria
2	29-05-2021	29	5	2021	538	11	Austria
3	28-05-2021	28	5	2021	639	4	Austria
4	27-05-2021	27	5	2021	405	19	Austria

2. Displaying the bottom 5 rows

In [60]:
```
data.tail()
```

Out[60]:

	dateRep	day	month	year	cases	deaths	countriesAndTerritories
2725	06-03-2021	6	3	2021	3455	17	Sweden
2726	05-03-2021	5	3	2021	4069	12	Sweden
2727	04-03-2021	4	3	2021	4884	14	Sweden
2728	03-03-2021	3	3	2021	4876	19	Sweden
2729	02-03-2021	2	3	2021	6191	19	Sweden

3.Find the shape of the dataset

In [82]:
```
data.shape
```

Out[82]:
```
(2730, 7)
```

4. Displaying the information

In [83]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2730 entries, 0 to 2729
Data columns (total 7 columns):
 #   Column                   Non-Null Count  Dtype 
---  ------                   --------------  ----- 
 0   dateRep                  2730 non-null   object
 1   day                      2730 non-null   int64 
 2   month                    2730 non-null   int64 
 3   year                     2730 non-null   int64 
 4   cases                    2730 non-null   int64 
 5   deaths                   2730 non-null   int64 
 6   countriesAndTerritories  2730 non-null   object
dtypes: int64(5), object(2)
memory usage: 149.4+ KB
```

5. Cheking for null values

In [84]:
```
data.isnull().sum()
```

Out[84]:
```
dateRep                    0
day                        0
month                      0
```

```
year                       0
cases                      0
deaths                     0
countriesAndTerritories    0
dtype: int64
```

6. Check for duplicate and drop them

In [85]:
```
dup = data.duplicated().any()
```

In [86]:
```
print(dup)
```

```
False
```

7.Get the entire statistics of the data

In [87]:
```
data.describe()
```

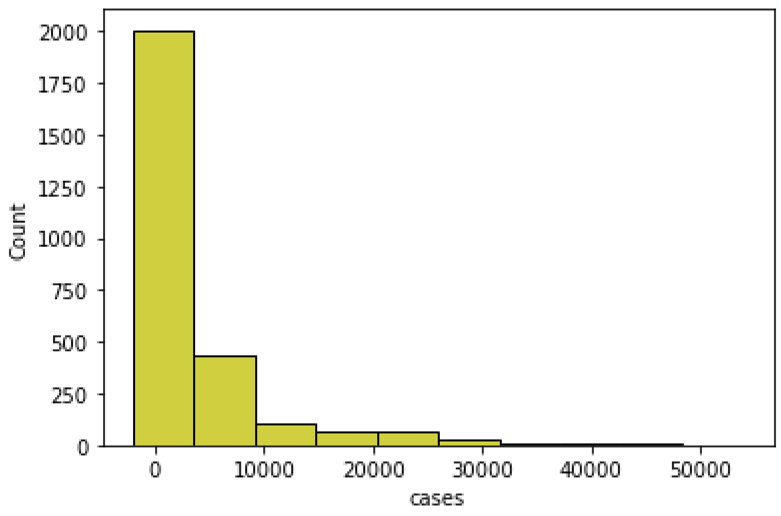
Out[87]:

	day	month	year	cases	deaths
count	2730.000000	2730.000000	2730.0	2730.000000	2730.000000
mean	16.000000	4.010989	2021.0	3661.010989	65.291941
std	8.765919	0.818813	0.0	6490.510073	113.956634
min	1.000000	3.000000	2021.0	-2001.000000	-3.000000
25%	8.000000	3.000000	2021.0	361.250000	2.000000
50%	16.000000	4.000000	2021.0	926.500000	14.500000
75%	24.000000	5.000000	2021.0	3916.250000	72.000000
max	31.000000	5.000000	2021.0	53843.000000	956.000000

VISUALISING THE DATA

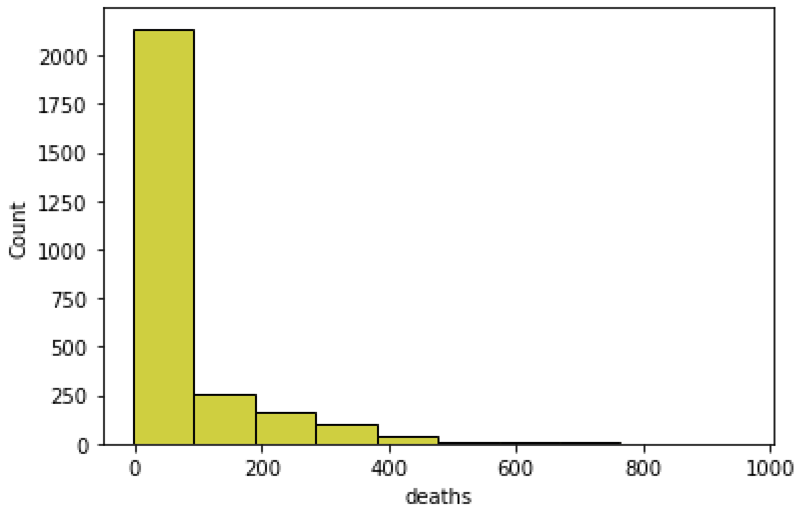
In [88]:
```
sns.histplot(data, x='cases', bins=10, color='y')
```

Out[88]:
```
<AxesSubplot:xlabel='cases', ylabel='Count'>
```



In [89]:
```
sns.histplot(data, x='deaths', bins=10, color='y')
```

Out[89]:
```
<AxesSubplot:xlabel='deaths', ylabel='Count'>
```

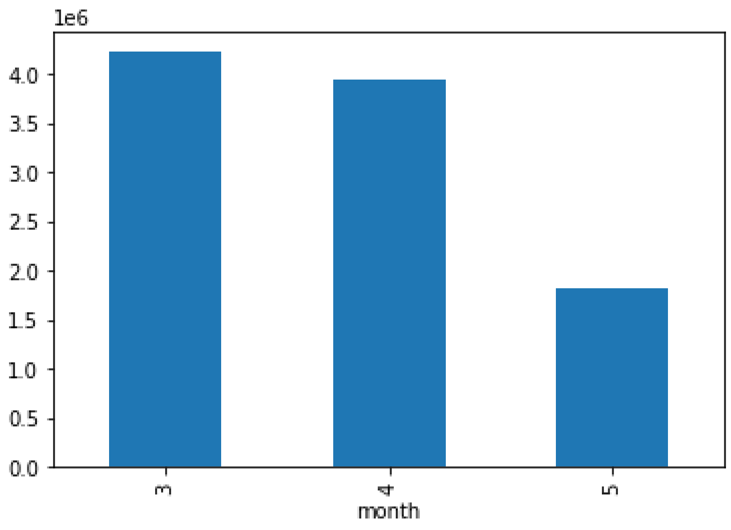


In [90]:
```
M=(data.groupby('month')['cases']).sum()
```

In [91]:
```
M
```

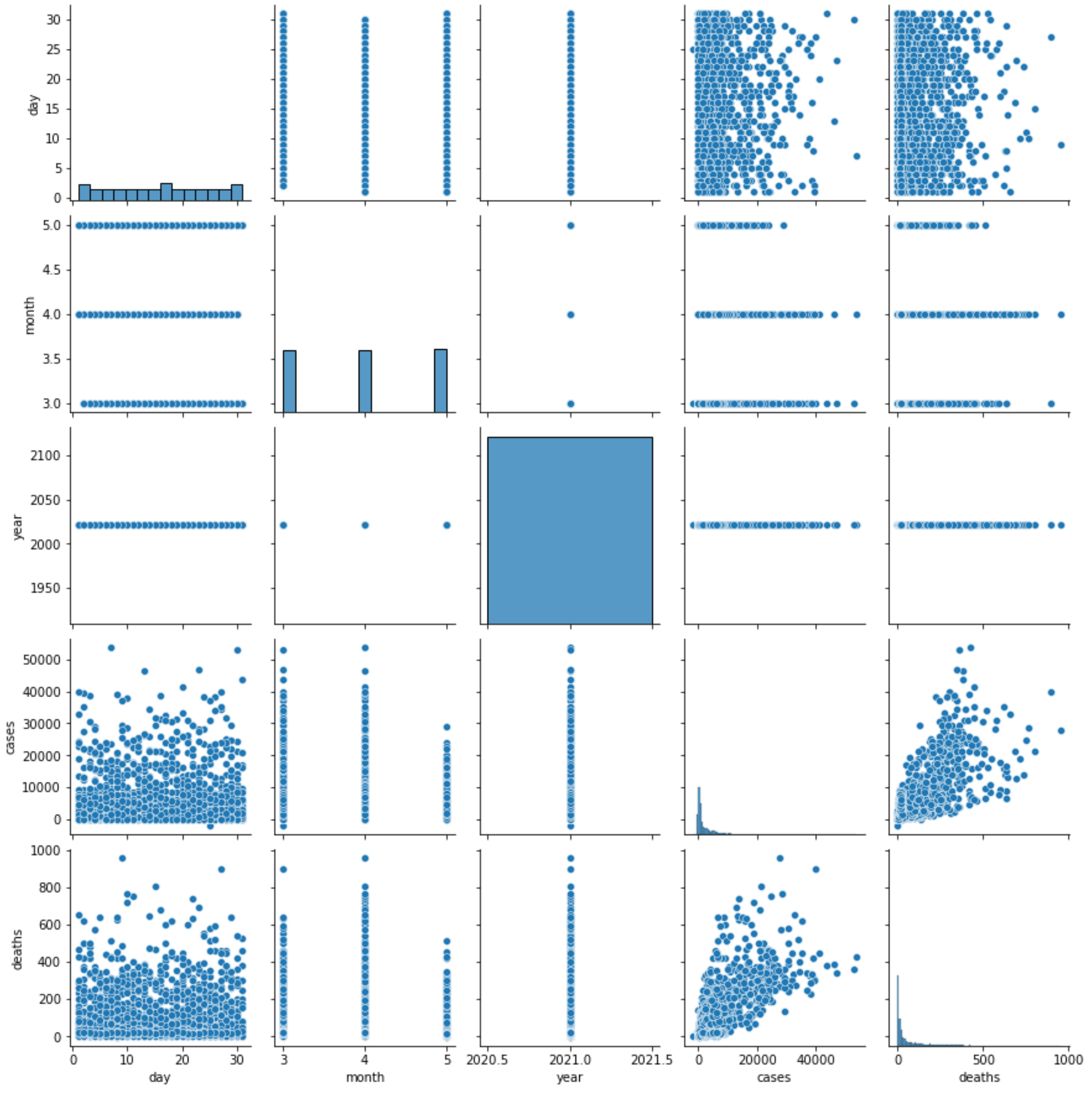
Out[91]:
```
month
3    4223468
4    3938341
5    1832751
Name: cases, dtype: int64
```

In [92]:
```
M.plot.bar()
plt.show()
```



In [93]:
```
plt.figure(figsize=(12,8))
sns.pairplot(data)
```

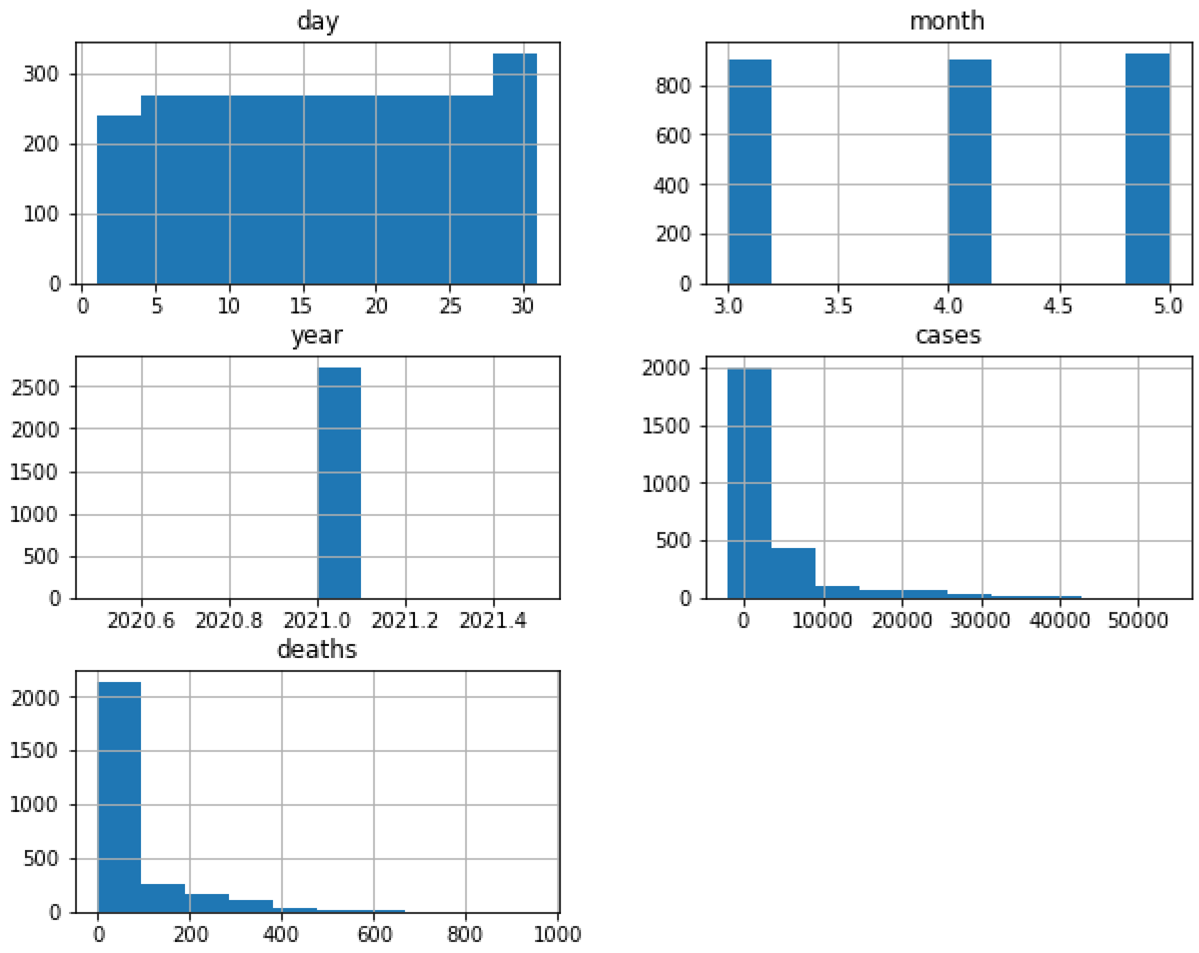
Out[93]:
```
<seaborn.axisgrid.PairGrid at 0x2477b25e2e0>

<Figure size 864x576 with 0 Axes>
```



```
In [ ]:
```

```
In [94]: data.hist(figsize=(10,8))
```

```
Out[94]: array([[<AxesSubplot:title={'center':'day'}>,
                 <AxesSubplot:title={'center':'month'}>],
                [<AxesSubplot:title={'center':'year'}>,
                 <AxesSubplot:title={'center':'cases'}>],
                [<AxesSubplot:title={'center':'deaths'}>, <AxesSubplot:>]],
               dtype=object)
```

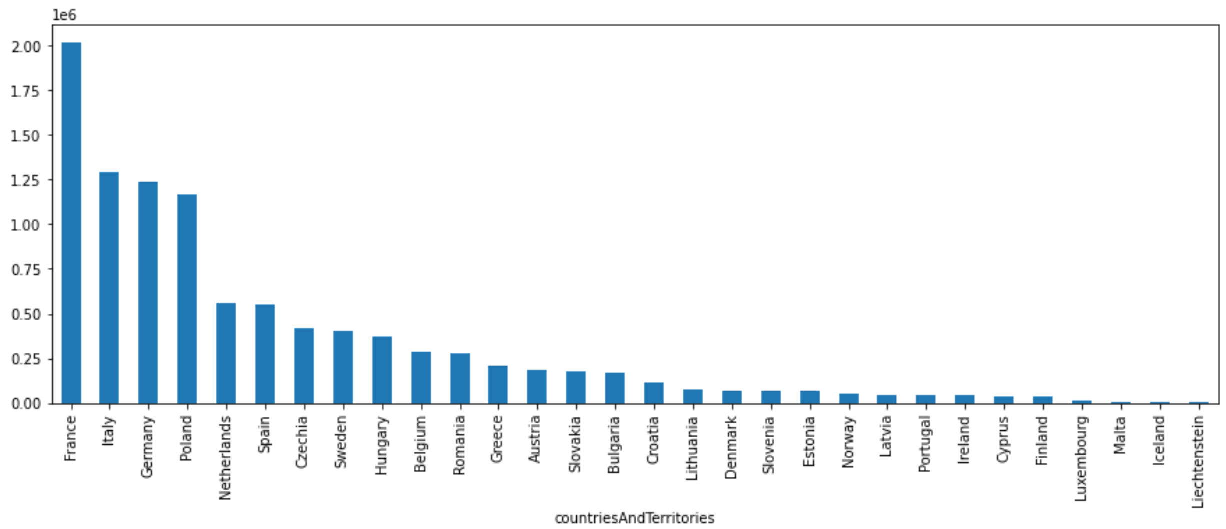


In [95]:
```
C=data.groupby('countriesAndTerritories')['cases'].sum().sort_values(ascending = False
C
```

Out[95]:
```
countriesAndTerritories
France            2020808
Italy             1290738
Germany           1234058
Poland            1164964
Netherlands        557983
Spain              552723
Czechia            421221
Sweden             404019
Hungary            371613
Belgium            288119
Romania            275590
Greece             210201
Austria            184416
Slovakia           178475
Bulgaria           171236
Croatia            113168
Lithuania           77040
Denmark             69188
Slovenia            63550
Estonia             62916
Norway              53995
Latvia              46912
Portugal            44096
Ireland             42057
Cyprus              37700
Finland             34760
Luxembourg          14464
Malta                7586
```

```
Iceland                527
Liechtenstein          437
Name: cases, dtype: int64
```

In [96]:
```
C.plot.bar(figsize=(15,5))
plt.show()
```



How many Cases Everyday

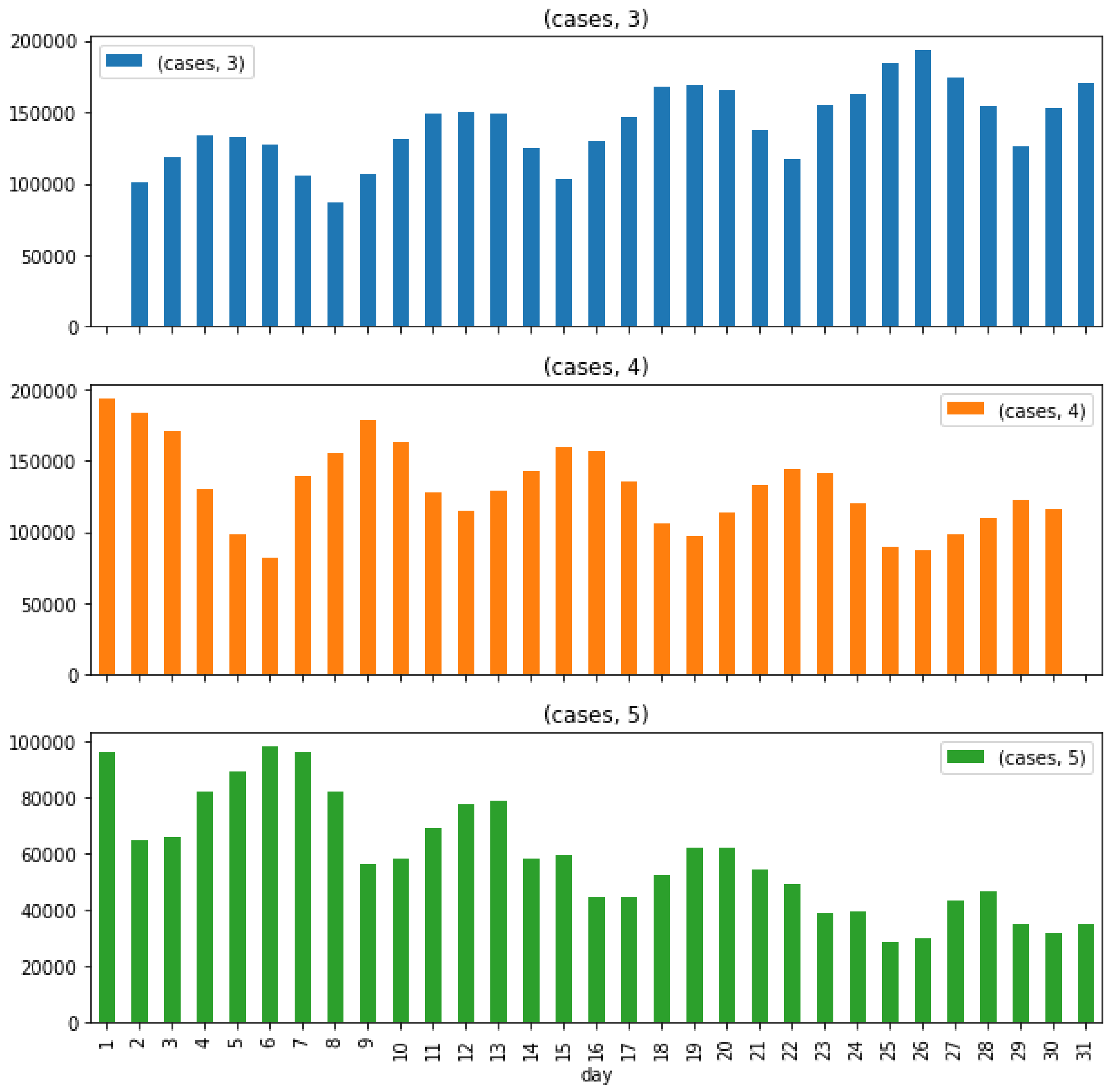
In [97]:
```
Day = data.groupby(['month','day'])[['cases']].sum()
Day
```

Out[97]:

		cases
month	**day**	
3	**2**	101010
	3	118005
	4	134054
	5	132634
	6	126808
...	**...**	...
5	**27**	43493
	28	46796
	29	35162
	30	31680
	31	34985

91 rows × 1 columns

In [98]:
```
Day.unstack(level=0).plot(kind='bar',subplots=True,figsize=(10,10))
plt.show()
```



```
In [ ]:
```

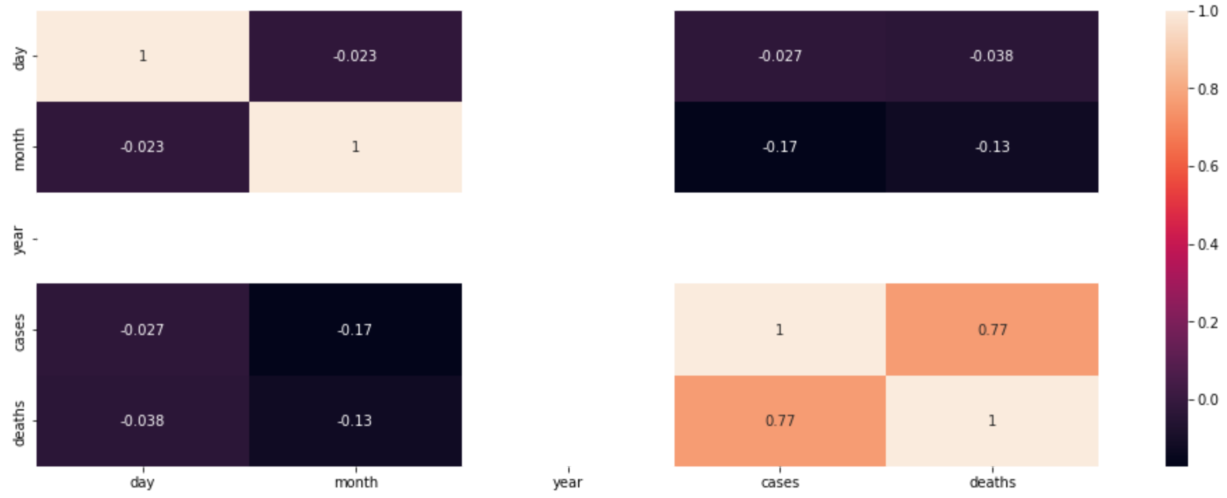
```
In [99]: data.corr()
```

Out[99]:

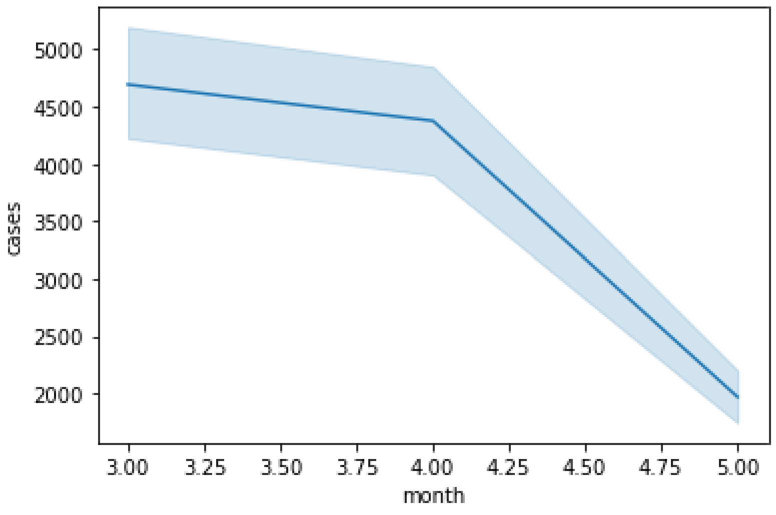
	day	month	year	cases	deaths
day	1.000000	-0.022973	NaN	-0.026988	-0.038128
month	-0.022973	1.000000	NaN	-0.172412	-0.126515
year	NaN	NaN	NaN	NaN	NaN
cases	-0.026988	-0.172412	NaN	1.000000	0.766309
deaths	-0.038128	-0.126515	NaN	0.766309	1.000000

```
In [100]: plt.figure(figsize = (17,6))
          sns.heatmap(data.corr(),annot=True)
```

```
Out[100]: <AxesSubplot:>
```



In [101]:
```
sns.lineplot(x="month", y="cases", data=data)
plt.show()
```



In [ ]:

In [ ]:

In [ ]:

In [ ]: