ISC 4241 - Activity 1, Part 1

Problem 1.1

In [5]:

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import statistics
```

In [6]:

```
covid = pd.read_csv('COVID_08312020.csv')
```

In [7]:

```
covid.head(10)
```

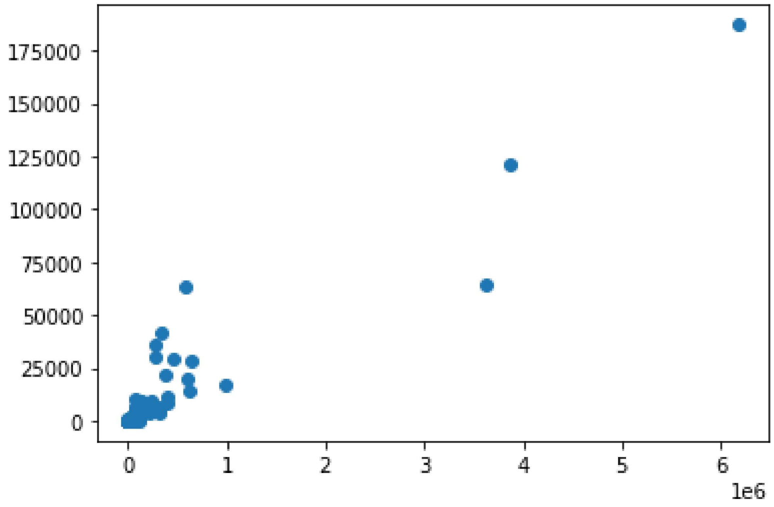
Out[7]:

```
       Country  Total Cases  Total Deaths  TOTCases_1M  TOTDeath_!M  TotalTested
0  Afghanistan        38162          1402          977           36       102598
1      Albania         9380           280         3260           97        57618
2       Angola         2624           107           79            3        64747
3    Argentina       408426          8457         9023          187      1242269
4      Armenia        43750           877        14760          296       205450
5    Australia        25670           611         1005           24      6167592
6      Austria        27166           733         3013           81      1172092
7   Azerbaijan        36309           531         3576           52       917027
8      Bahrain        51574           189        30150          110      1100729
9   Bangladesh       310822          4248         1884           26      1537749
```

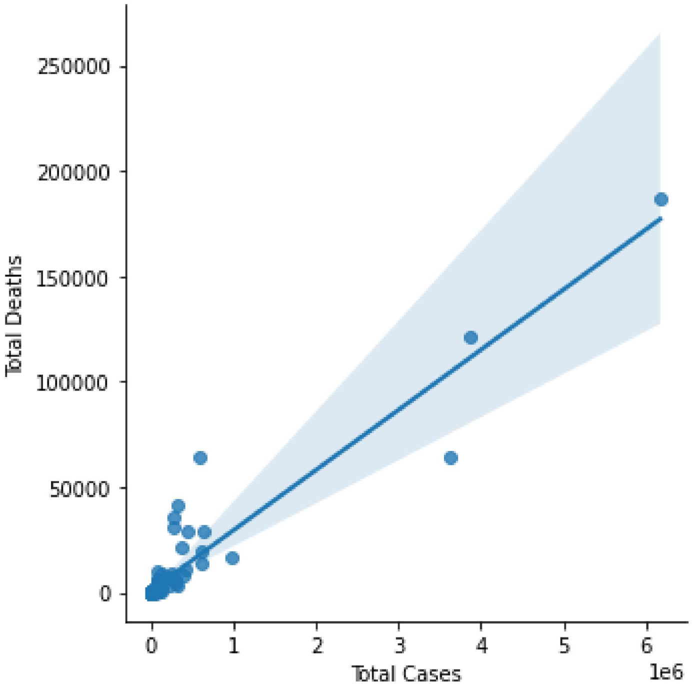
Problem 1.2

In [8]:

```
plt.scatter(covid['Total Cases'], covid['Total Deaths'])
plt.show()
sns.lmplot(x='Total Cases', y='Total Deaths', data=covid)
```

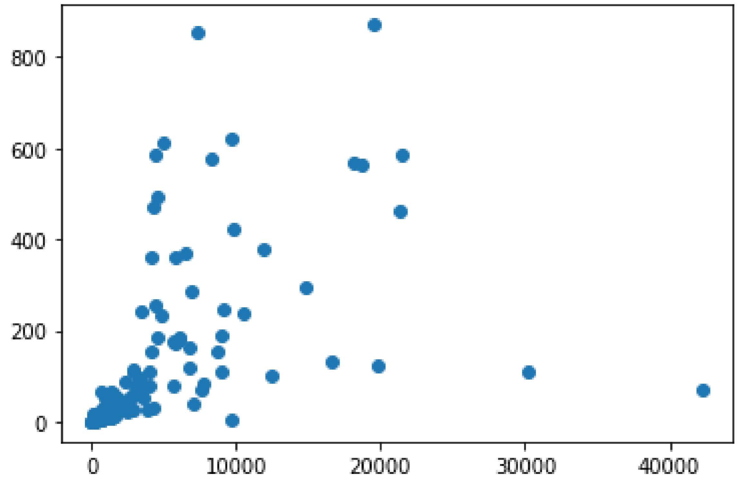


```
Out[8]: <seaborn.axisgrid.FacetGrid at 0x7f60eb8de410>
```



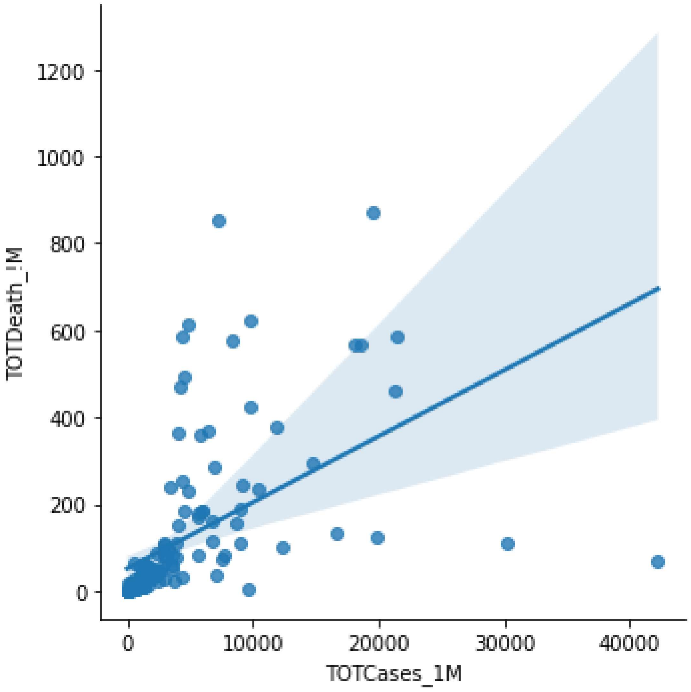
Problem 1.3

```
In [9]: plt.scatter(covid['TOTCases_1M'], covid['TOTDeath_!M'])
        plt.show()
        sns.lmplot(x='TOTCases_1M', y='TOTDeath_!M', data=covid)
```



Out[9]:

```
<seaborn.axisgrid.FacetGrid at 0x7f60eb86add0>
```



Problem 1.4

In [37]:

```python
from numpy import minimum
mean = [covid['Total Cases'].mean(), covid['Total Deaths'].mean(), covid['TOTCases_1M'
mean = [round(item,3) for item in mean]

median = [covid['Total Cases'].median(), covid['Total Deaths'].median(), covid['TOTCas
min1 = [covid['Total Cases'].min() , covid['Total Deaths'].min(), covid['TOTCases_1M']
max1 = [max(covid['Total Cases']) , max(covid['Total Deaths']), max(covid['TOTCases_1M

std = [statistics.stdev(covid['Total Cases']), statistics.stdev(covid['Total Deaths'])
std = [round(item,3) for item in std]

var = [statistics.variance(covid['Total Cases']), statistics.variance(covid['Total Dea
var = [round(item,3) for item in var]
```

```
skew = [covid['Total Cases'].skew(skipna=True), covid['Total Deaths'].skew(skipna=True
skew = [round(item,3) for item in skew]
```

In [38]:

```
data = [mean, median, min1, max1, std, var, skew]
data
df = pd.DataFrame({
            'mean' : mean,
             'median': median,
              'minimum': min1,
              'maximum': max1,
              'variance': var,
              'standard deviation': std,
              'skewness': skew

}, index= ['Total Cases', 'Total Deaths', 'TOTCases_1M', 'TOTDeath_!M', 'TotalTested']

df
```

Out[38]:

	mean	median	minimum	maximum	variance	standard deviation	skewness
Total Cases	181486.137	24367.0	355	6173236	4.767454e+11	6.904675e+05	6.836
Total Deaths	6091.115	411.0	1	187224	4.393447e+08	2.096055e+04	6.343
TOTCases_1M	4177.388	1789.0	11	42230	3.814673e+07	6.176304e+03	3.066
TOTDeath_!M	115.187	34.0	0	871	3.215569e+04	1.793200e+02	2.229
TotalTested	3141261.633	404944.0	120	90410000	1.280726e+14	1.131691e+07	6.328

Note for Output: Variance and Standard Deviation are rounded to 3 decimal places but the whole number is too large to fit in table output.

Problem 1.5

In [14]:

```
print('\nPearson Correlation Coefficient on Columns')
print(covid.iloc[: , 1:].corr(method='pearson'))
print('\nSpearman Correlation Coefficient on Columns')
print(covid.iloc[: , 1:].corr(method='spearman'))
```

```
Pearson Correlation Coefficient on Columns
              Total Cases  Total Deaths  TOTCases_1M  TOTDeath_!M  TotalTested
Total Cases      1.000000      0.940320     0.306869     0.361500     0.659495
Total Deaths     0.940320      1.000000     0.310425     0.525759     0.620081
TOTCases_1M      0.306869      0.310425     1.000000     0.524348     0.129914
TOTDeath_!M      0.361500      0.525759     0.524348     1.000000     0.190367
TotalTested      0.659495      0.620081     0.129914     0.190367     1.000000

Spearman Correlation Coefficient on Columns
              Total Cases  Total Deaths  TOTCases_1M  TOTDeath_!M  TotalTested
Total Cases      1.000000      0.919164     0.735747     0.719670     0.736226
Total Deaths     0.919164      1.000000     0.643341     0.794517     0.668932
TOTCases_1M      0.735747      0.643341     1.000000     0.889098     0.456534
TOTDeath_!M      0.719670      0.794517     0.889098     1.000000     0.448563
TotalTested      0.736226      0.668932     0.456534     0.448563     1.000000
```