Exploring a larger array

In [3]:
```
import matplotlib.pyplot as plt
import numpy as np
```

Load the data

In [4]:
```
data2 = np.load('datasets/009ExerciseFile2.npy')
```

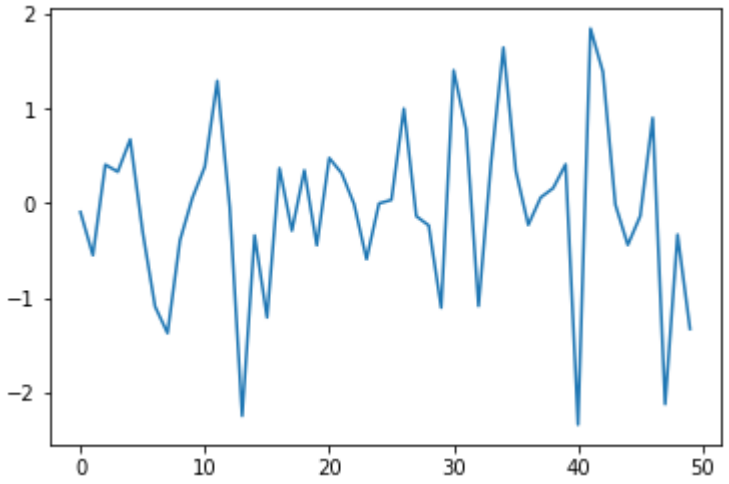
In [5]:
```
data2.shape
```

Out[5]:
```
(200, 50)
```

Plot the 5th row

In [6]:
```
plt.plot(data2[4,:])
```

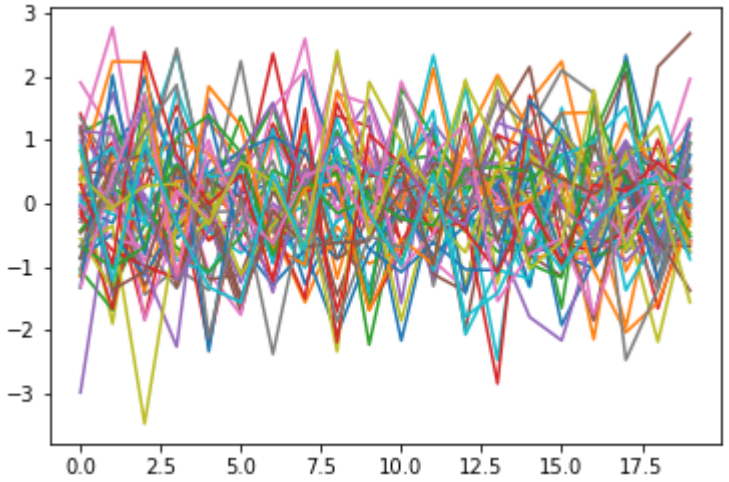
Out[6]:
```
[<matplotlib.lines.Line2D at 0x117043773d0>]
```



Plotting the first 20 rows of all columns.

Added the semicolon to ignore the list of objects drawn.

In [7]:
```
plt.plot(data2[0:20,:]);
```



Sum all the rows within a column

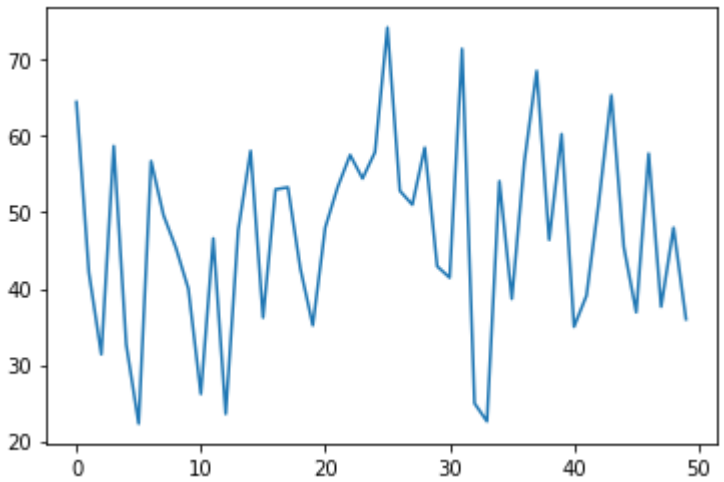
In [8]:
```
columnsum = data2.sum(0)
```

In [9]:
```
columnsum.shape
```

Out[9]:
```
(50,)
```

In [10]:
```
plt.plot(columnsum)
```

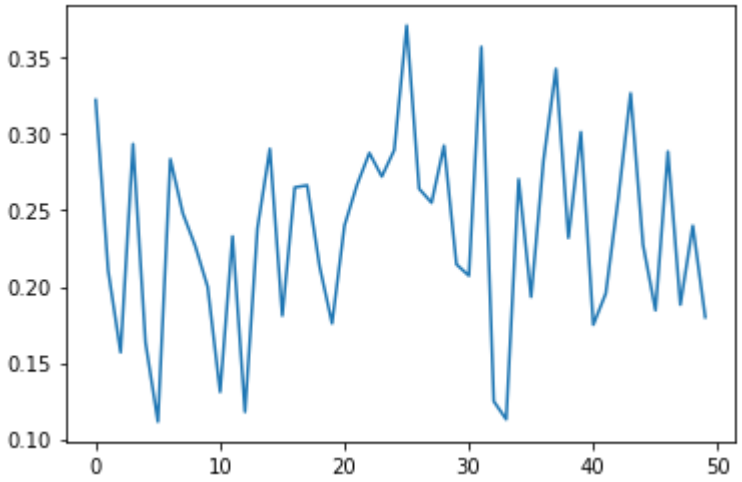
Out[10]:
```
[<matplotlib.lines.Line2D at 0x11704560d90>]
```



In [11]:
```
columnmean = data2.mean(0)
```

In [12]:
```
plt.plot(columnmean)
```

Out[12]:
```
[<matplotlib.lines.Line2D at 0x117045d0400>]
```



There's no pattern in the columns, so now I'm going to sum all the columns within a row.

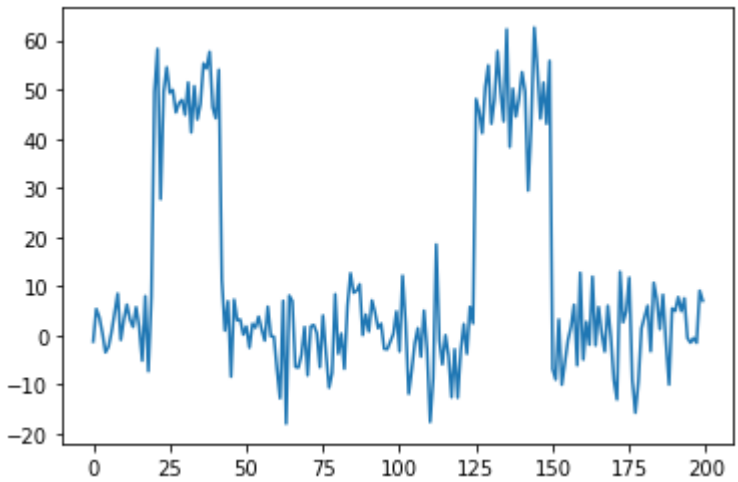
In [13]:
```
rowsum = data2.sum(1)
```

In [14]:
```
rowsum.shape
```

Out[14]:
```
(200,)
```

In [15]:
```
plt.plot(rowsum)
```

Out[15]:
```
[<matplotlib.lines.Line2D at 0x11704630880>]
```



In [16]:
```
rowmean = data2.mean(1)
```

In [17]:
```
rowmean.shape
```

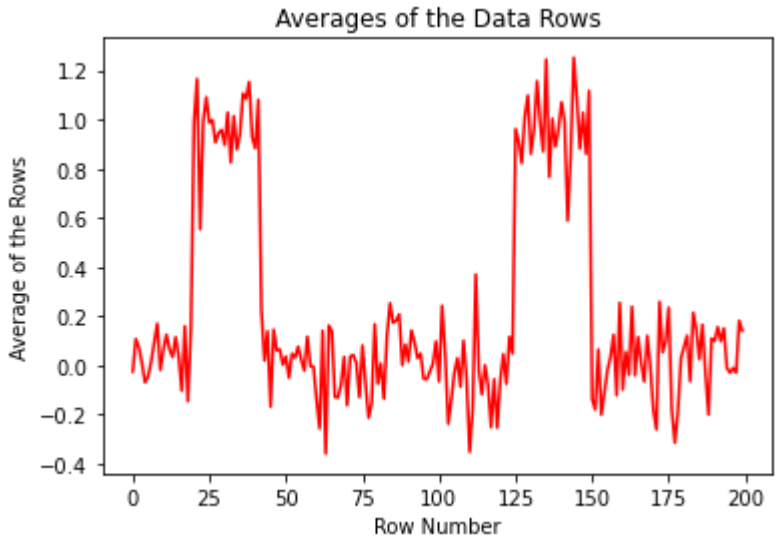
Out[17]:
```
(200,)
```

Found the Pattern!

In [20]:

```
plt.plot(rowmean, color='r')
plt.title("Averages of the Data Rows")
plt.xlabel("Row Number")
plt.ylabel("Average of the Rows")
```

Out[20]:
```
Text(0, 0.5, 'Average of the Rows')
```

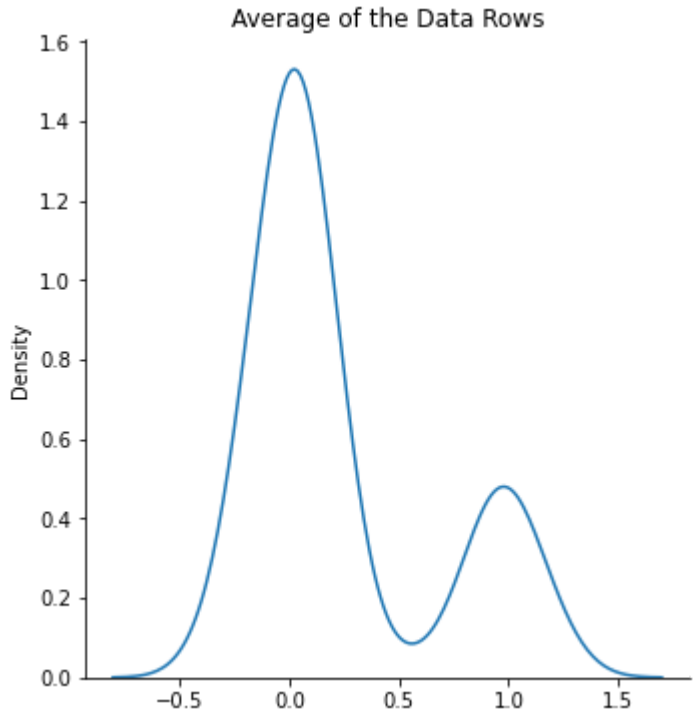


In [2]:
```
import seaborn as sns
```

Smoothed out the plot using kde

In [26]:
```
sns.displot(rowmean, kind='kde')
plt.title("Average of the Data Rows")
```

Out[26]:
```
Text(0.5, 1.0, 'Average of the Data Rows')
```



It seems that some of the rows have much higher means than the others!

Playing with the data (you can ignore this, haha)

First low point

In [39]:
```
lowmeans = data2[0:21,:].mean(1)
```

Out[39]:
```
array([-0.0251328 ,  0.10726637,  0.07337289,  0.00927616, -0.06908646,
       -0.04630807,  0.01446104,  0.09168802,  0.16978231, -0.01864572,
        0.06339427,  0.12478528,  0.06516282,  0.03420841,  0.11464579,
        0.03567118, -0.10314474,  0.15952553, -0.1460444 ,  0.15566669,
        0.99078288])
```

First high point

In [40]:
```
data2[21:51,:].mean(1)
```

Out[40]:
```
array([ 1.16534946,  0.55411187,  0.99156294,  1.09054282,  0.98656534,
        0.99806951,  0.90702361,  0.94431689,  0.95793851,  0.89697224,
        1.02868572,  0.82551507,  1.01393924,  0.87848582,  0.94088343,
        1.10603627,  1.08553242,  1.15359628,  0.92851204,  0.88358015,
        1.08050061,  0.22567801,  0.01940809,  0.13890886, -0.16799382,
        0.14532003,  0.06151215,  0.06441102,  0.00301188,  0.03614316])
```

Second low

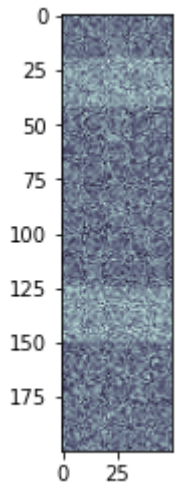
In [41]:
```
data2[51:71,:].mean(1)
```

Out[41]:
```
array([-0.05028922,  0.04695551,  0.03121346,  0.07603283,  0.02445789,
       -0.02125817,  0.11661108, -0.00352865, -0.00510528, -0.14005433,
       -0.25623949,  0.14051726, -0.35937381,  0.16177683,  0.13918086,
       -0.12830265, -0.13105285, -0.07857281,  0.03409052, -0.16267873])
```

Different view of the data

In [38]:
```
plt.imshow(data2, cmap="bone")
```

Out[38]:
```
<matplotlib.image.AxesImage at 0x2827fb1a070>
```



In [ ]: