Exploring a larger array

In [1]:
```
import matplotlib.pyplot as plt
import numpy as np
```

Load the data

In [3]:
```
data2 = np.load('datasets/009ExerciseFile2.npy')
```

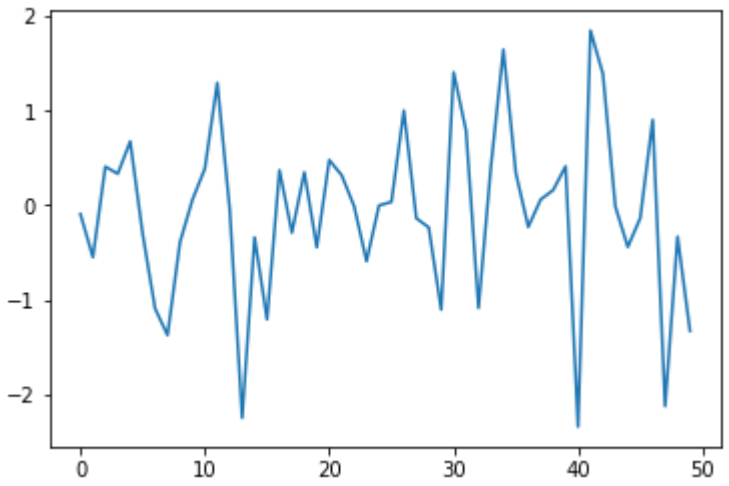
In [4]:
```
data2.shape
```

Out[4]:
```
(200, 50)
```

Plot the 5th row

In [5]:
```
plt.plot(data2[4,:])
```

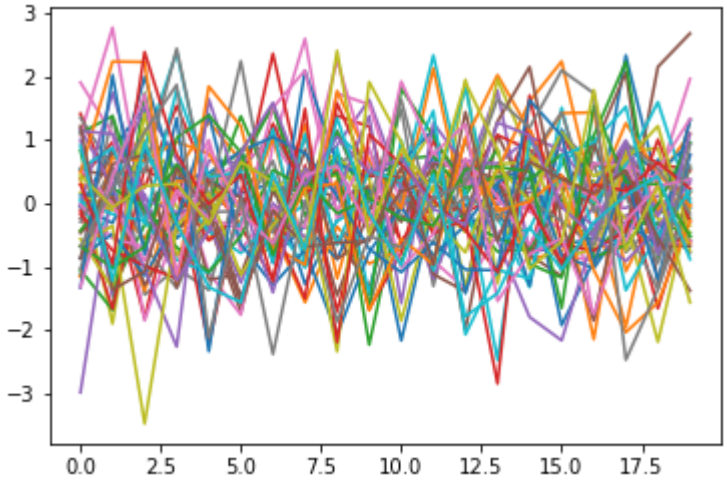
Out[5]:
```
[<matplotlib.lines.Line2D at 0x2827bc773a0>]
```



Plotting the first 20 rows of all columns.

Added the semicolon to ignore the list of objects drawn.

In [8]:
```
plt.plot(data2[0:20,:]);
```



Sum all the rows within a column

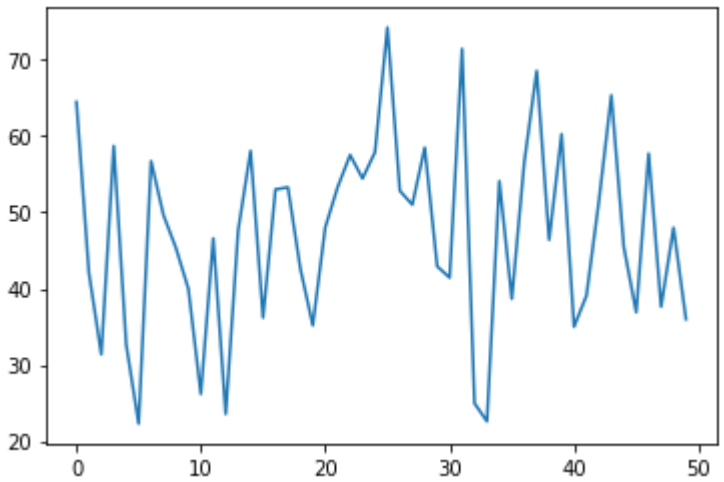
In [10]:
```
columnsum = data2.sum(0)
```

In [11]:
```
columnsum.shape
```

Out[11]:
```
(50,)
```

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

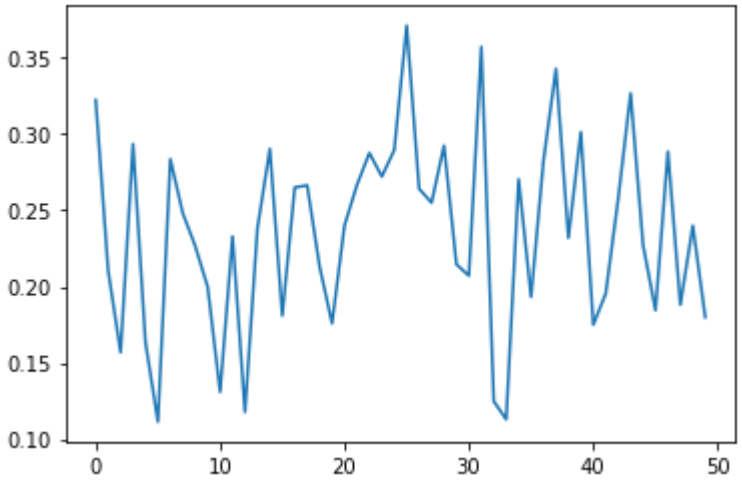
Out[12]:
```
[<matplotlib.lines.Line2D at 0x2827c6cf7f0>]
```



In [19]:
```
columnmean = data2.mean(0)
```

In [20]:
```
plt.plot(columnmean)
```

Out[20]:
```
[<matplotlib.lines.Line2D at 0x2827c81fbe0>]
```



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

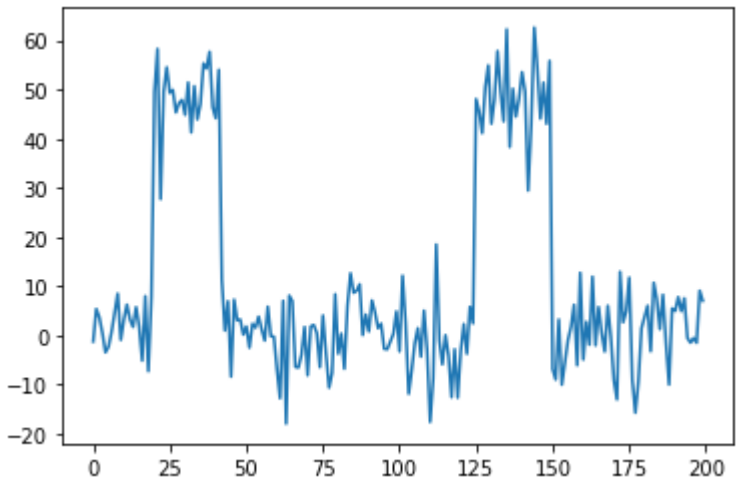
In [13]:
```
rowsum = data2.sum(1)
```

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

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

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

Out[15]:
```
[<matplotlib.lines.Line2D at 0x2827c731be0>]
```



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

In [18]:
```
rowmean.shape
```

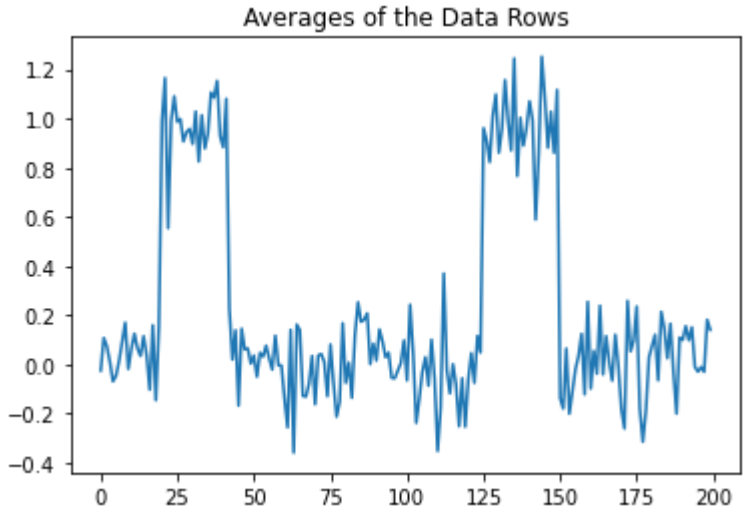
Out[18]:
```
(200,)
```

Found the Pattern!

In [24]:

```
plt.plot(rowmean)
plt.title("Averages of the Data Rows")
```

Out[24]:
```
Text(0.5, 1.0, 'Averages of the Data Rows')
```

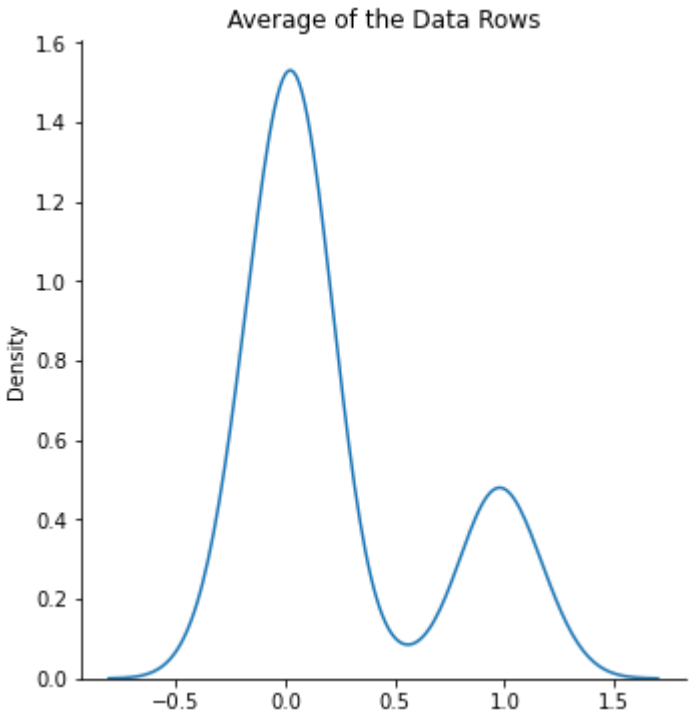


In [22]:
```
import seaborn as sns
```

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)

In [27]:
```
rowlow1 = data2[0:21,:]
```

In [29]:
```
rowhigh1 = data2[21:51,:]
```

In [30]:
```
rowlow2 = data2[51:71,:]
```

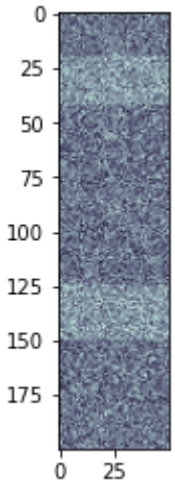
In [31]:
```
rowlow3 = data2[71:91,:]
```

In [34]:
```
rowlow4 = data2[91:111,:]
```

Different view of the data

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

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



In [ ]:
```

```