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Jfree Chart and Apache libraries write up

This project presented a new form of challenge that I've never really experienced before programming. This project taught me how to properly add external libraries to eclipse in order to produce unique results. During this project we used JFreeChart to graph our salted smoothed and regular data. We also used Apache libraries to create a running mean that we can then use to smooth our data.

Learning how to use JFreeChart was challenging but interesting. Like I mentioned before, I've had no prior experience with external libraries, so importing JFreeChart into eclipse was really difficult to start. Lucky through a few google searches I discovered that it really is as easy as just clicking add build path and selecting JFreeChart. Once I had JFreeChart loaded into my IDE I just had to figure out how to make it work. JFreeChart has lots of functions and unique features, but all I need is the scatterplot function, however to use the scatter plot function I need to use data sets, which use a series. Thus to start this project i started by declaring two private variables one of type dataset and one of type series. The series variable acts as almost an array and holds each created value, which we can then pass to the dataset which can then be passed to our scatterplot. After creating the dataset and series I started by then creating our graph method, this method just graphs a normal y = mx+b function. Similarly to my other projects I started by taking user input that declares how many points we will graph. I then populated the series by just adding each value in the for loop to the series. I then took that newly populated series to the data set. Next, I created a JfreeChart Variable which I set equal to a scatter plot that I then passed to my new data set too. I then ran a line of code to just set the bounds of my plot and saved it as a png to my computer.

Next i work on the salter method, this method takes our newly generated graph data and salts it. Similarly to the above method I ran through a for loop, however this for loop took each individual value and multiplied it by a random integer. I then once again passed this value to our data set, which I then used to plot. I again called a scatter plot function and saved it to my computer.

The final method I created was the smoother method, which took our salted data and smoothed it. To do this process we used a running mean, which was calculated by using apache libraries. The apache library was very extensive, but i only needed the mean function. Upon my research and reading of the apache web site i found a mean function that allows me to set parameters for a running mean. This function allows me to input an array list of type double so it works well with this project, this implementation looks like this double mean = StatUtils.mean(ysmoothed, i, 10). These two variables separate by a common allow me to set the mean from an integer to another integer. In this case I wanted the mean of the closest 10 integers so I just plug 10 in for the second variable. This process took out the long if statement process that I used in previous assignments. Although this was easy, this system had drawbacks, because I had to keep the length of my array in bounds my for loop had to drop the last 10 pieces of data. I know this is an issue and I could have lowered my mean number from 10, but finding the mean of 10 integers produced a really nice looking graph, so I stuck with it. This method had a unique structure compared to my other two methods. I first started out by creating an array of type double to hold my new y values. I then ran a for loop to pass all my values from my dataset and series to my array. I had to pass these values to an array, because apache doesn't work well with Jframe. Once I had the values passed I then ran another for loop to smooth my data. This means I ran the above mean function to calculate my new values for my smoothed graph. I then took

these smoothed values, passed it to a series set and then passed that series to a data set. I then created a scatter plot from those new data points. I saved this graph as my smoothed graph and set the bounds as 750 by 750. I showed all my graphs below