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HW: Lab#8
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General Information:
We created HashPlot.java:
The HashPlot.java is the main class that test the hash function $h(k) = (ak + b)$ mod m. It compute the sequence of values h(k) for any sequence of integers given in input. That can be read by using BufferReader. Then you store the information to the output file.
Next, you use the output file to create a plot using a JFrame from the Scatterplot class.
Note: Since we are only allowed to submit HashPlot.java, we included the Scatterplot class within the same program.
If the load factor reaches the value 0.75, then rehash the table twice the size (or m in this case).
We used the input file given called input_sequence.txt. The ouput file is produced from HashPlot.java which is included in the zip file.
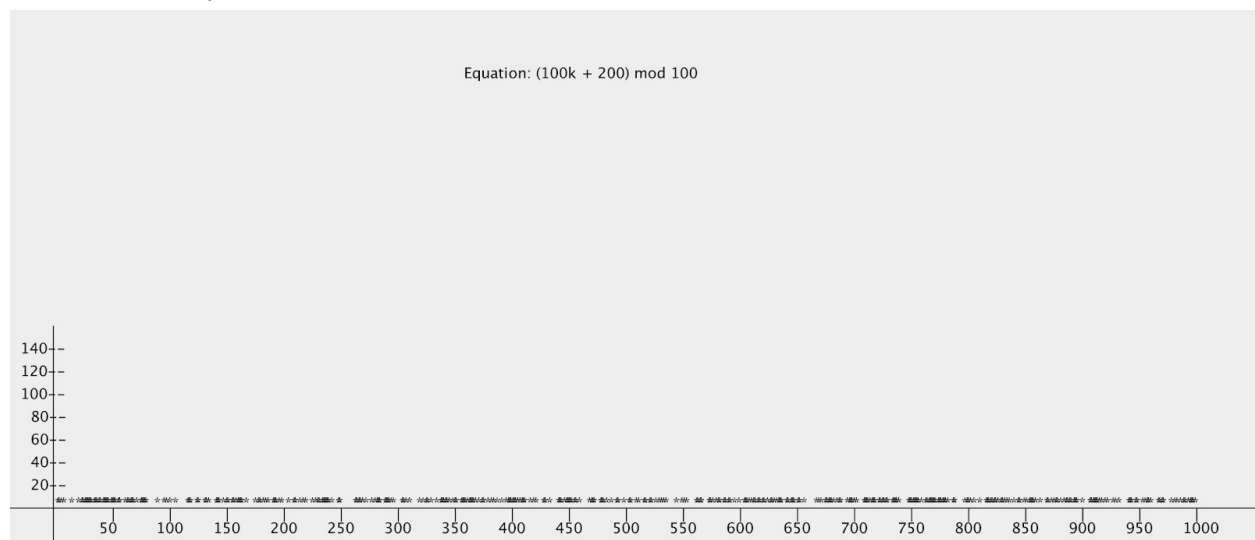
Task 1: Identify 3 choices for a, b and m, for which you think the distribution of values is bad (1.5 points).
a = 100
b = 200
m = 100
Although we are not quite sure exactly, but we hypothesize that since a and b are multiple of each other, then when you mod m, you will most likely get the same/close number which will result in a graph that looks like the one below. That is a lot of collision and we believe that can be a reason why.

Equation: (100k + 200) mod 100

Task 2: Identify 3 different choices for a, b and m, for which you think the distribution of values is good. (1.5 points)

a = 10
b = 23
m = 127

We hypothesize that that since a and b are not a multiple of each other, the possibilities of getting the same output after mod m is less likely. Thus, there is less collisions and a better hashtable using the formula.

Equation: (10k + 23) mod 127