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/*
 * To change this license header, choose License Headers in Project Propert
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 * and open the template in the editor.
 */
package series;

import java.util.ArrayList;

/**
 * @author faviern
 */
public class Series {

    //Variables
    ArrayList<Double> values = new ArrayList<Double>();
    public String name;

    //Constructeur
    public Series(String n) {
        name = n;
    }

    public int numberOfElements() {
        return values.size();
    }

    public double average() {
        double moyenne = 0;
        for (int i = 0; i < numberOfElements(); i++) {
            moyenne = moyenne + values.get(i);
        }
        return moyenne / numberOfElements();
    }

    public double std() {
        double std, dif = 0, sum = 0;
        for (int i = 0; i < numberOfElements(); i++) {
            dif = values.get(i) - average();
        }
        sum = dif + sum;
        std = sum * sum;
        return Math.sqrt(std / numberOfElements());
    }
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    public String getName() {
        return name;
    }

    public double[] getValues() {
        double[] tab = new double[numberOfElements()];
        for (int i = 0; i < numberOfElements(); i++) {
            tab[i] = values.get(i);
        }
        return tab;
    }

    public double getMax() {
        double valeur, max = 0;
        for (int i = 0; i < numberOfElements(); i++) {
            valeur = values.get(i);
            if (valeur > max) {
                max = valeur;
            }
        }
        return max;
    }

    public double getMin() {
        double valeur, min = 100000;
        for (int i = 0; i < numberOfElements(); i++) {
            valeur = values.get(i);
            if (valeur < min) {
                min = valeur;
            }
        }
        return min;
    }

    public void add(double v) {
        values.add(v);
    }

    public void populateWithValues(int numberOfValues, double min, double m
        for (int i = 0; i < numberOfValues; i++) {
            double v;
            v = Math.random() * (max - min) + min;
            values.add(v);
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        }
    }

    public void populateWithTimes(int numberOfValues, double max) {
        for (int i = 0; i < numberOfValues; i++) {
            double v;
            v = Math.random() * (max);
            values.add(v);
        }
        java.util.Collections.sort(values);
    }

    public double[] tabDeltaX(int numberOfValues) {
        double[] pdiffk = new double[numberOfElements() - 1];
        for (int i = 0; i < numberOfElements() - 1; i++) {
            pdiffk[i] = Math.abs(values.get(i + 1) - values.get(i));
        }
        return pdiffk;
    }

    public double[] tabDeltaX2(int numberOfValues) {
        double[] fdiffk = new double[numberOfElements() - 1];
        for (int i = 0; i < numberOfElements() - 1; i++) {
            fdiffk[i] = Math.abs(values.get(i + 1) - values.get(i));
        }

        return fdiffk;
    }

    public void detectOutliers() {
        double[] fdiffk = new double[numberOfElements() - 1];
        fdiffk=tabDeltaX(numberOfElements()-1);
        double[] pdiffk = new double[numberOfElements() - 1];
        pdiffk=tabDeltaX(numberOfElements()-1);
        double lambda=1;
        for (int i = 0; i < numberOfElements() - 1; i++) {
            double randomNbr =Math.random()*(2500- 400)+400;
            if (fdiffk[i]>average()+ lambda*std())
            {
                 if (pdiffk[i]>average() + lambda*std())
                    {
                    if (pdiffk[i]*fdiffk[i]<0)

                        values.set(i,randomNbr);
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                    }
                }
            lambda=lambda/2;
            System.out.println(" valeur de lambda " + lambda);
            }

        }



    public static void main(String[] args) {

        Series time = new Series("temps");
        time.populateWithTimes(10, 24);
        Series valeurs = new Series("valeurs");
        valeurs.populateWithValues(10, 400, 2500);

        for (int i = 0; i < 10; i++) {
            System.out.println(" " + time.getValues()[i]);
        }

        System.out.println(" ");

        for (int i = 0; i < 10; i++) {
            System.out.println(" " + valeurs.getValues()[i]);
        }

    }

}
```