Университет ИТМО

Факультет программной инженерии и компьютерной техники

Лабораторная работа №2

по «Алгоритмам и структурам данных»

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1207 – Median on the plane
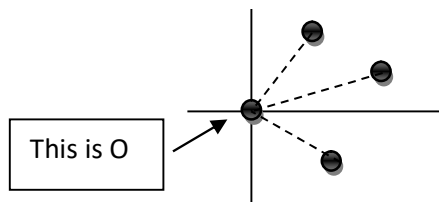
Request:

Many points on the plane.(N is even)

No three points belong to the same strait line.

How to solve:

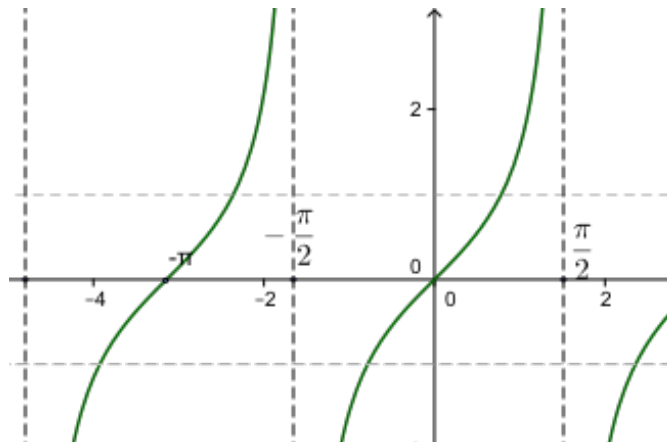+ select the point with the smallest x coordinates then set that point is center point(we can called is point O).

+ with center point is O, we build the system of all points.

We can get the system of points look like:

This is O

+ soft all remaining point according to their tan value

about tan:

(-pi / 2; pi / 2) the solubility function increases (-infinity; infinity)
+point O and the point between the array forming the line, that strait line they belong to divide the set of points into two equal-sized parts.

1604 – Country of fools

Input:

+ k: number of different type of speed limit signs.

+ n1 ,n2... nk: number of each sign.

Request:

+ The driver needs to change the speed as much as possible.

+ The speed changes every time the driver see different signs.

How to solve:

+ we find 2 type of sign with the most quanity .Using sorting if $(a3 > min(a1,a2))$.

+ put them into the reults arrays, then decrease their type by 1.

+ return to first step until there is just only 1 sign left.

+ all of sign have been placed in the results array.

1726 - Visits

Input:

+ n: number of member .

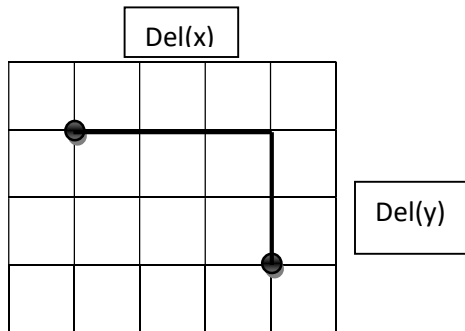+ xi yi :coordinate each person.

Request:

+ All the members of the program committee walk only along the streets, and they always choose the shortest way.

+ Average distance of each person.

How to solve:

For example:

we can split the path length in to sum of del(n,x) and sum of del(n,y).