Given two sets of points on the plane, determine whether there is a line that separates these points. In other words, is there a line for which all the points of one set are above and all the points of the other set are below? Design and implement an algorithm to solve this problem. Points are allowed to be on the line and points from two different sets may appear on the line. There may be infinitely many lines that separate the two point sets. In such case you can report any one of these lines as the solution. If no such line that separates the two point sets exists, you should provide a textual output indicating this fact.

You are going to be provided a helper program to visualize your output. You may write your algorithm as a function within this helper program and submit this as your homework.

Below are input and output specifications.

INPUT:
<M: number of points in the first set>
<point 1 x-coord><tab><point 1 y-coord>
....
<point M x-coord><tab><point M y-coord>
<N: number of points in the second set>
<point 1 x-coord><tab><point 1 y-coord>
....
<point N x-coord><tab><point N y-coord>

OUTPUT:
Either a message such as “Line does not exist” or the line equation for the separating line as: “y=mx+b”. If you use the helper code you should and return the line as the function output, you should also see your line visually.

Check the newsgroup and course web site for the helper program.

You are free to use other sources (algorithm, source code, etc.) as long as you cite them properly (using comments) in the source code that you submit.

Deliverables:

- Your source code. Submit your code by sending an e-mail to tcan@ceng.metu.edu.tr