King's Palace Garden

Input file:	`stdin`
Output file:	`stdout`
Time limit:	3 seconds
Memory limit:	256 megabytes

King of Lemuria Julian XCIX has built a new palace for himself in the middle of Nowhere. Nowhere is a large plain savanna with several baobab trees. Now Julian wants to design the Palace Garden around his palace. Lemuria customs dictate that the Garden should have a shape of a convex polygon with corners in centers of baobab trees and without any baobabs inside the Garden. But the Palace should be strictly inside it.

Your task is to help Julian to select the Garden of the maximal area. If there is more than one garden of the same maximal area possible, find any of them.

Input

In the first line of input there is one integer N — number of baobabs, $0 \le N \le 500$. Second line contains two integers — coordinates of the palace. Each one of the following N lines also contains two integers — coordinates of baobab tree. All coordinates (of the Palace and of baobabs) satisfy the condition $-10^9 \le x, y \le 10^9$. All $N + 1$ points are pairwise distinct and no three of them lie on the same line.

Output

The first line of the output should contain one number with exactly one digit after the decimal point — area of the garden.

The second line should contain one integer — number of corners of the garden.

The third line should contain the numbers of baobabs which stand in the corners of the garden in counterclockwise order. Baobabs in the input data are numbered from 1.

If there is no garden satisfying the conditions, the output should contain one number -1.

Examples

stdin	stdout
4 5 5 1 1 1 9 7 5 10 6	24.0 3 1 3 2
3 0 0 1 1 0 1 1 0	-1