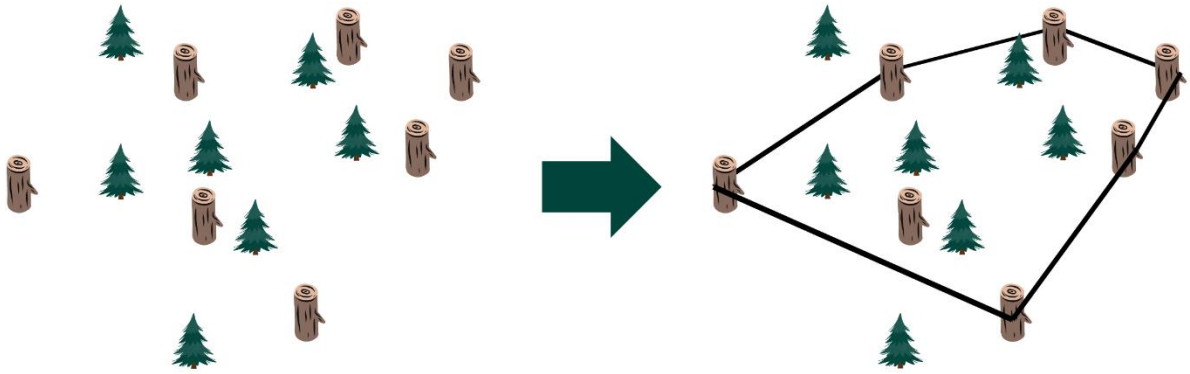
PROTECT THE PINE TREES

You are entrusted with the task of safeguarding a group of pine trees by constructing a protective fence. The protection is provided by connecting wooden cylinders with a rope. Given the coordinates of N pine trees and M wooden cylinders, your goal is to determine the optimal set of K cylinders to create a closed fence with the largest possible area that encompasses as many pine trees as possible.



Input:

The first line contains two integers, N and M, representing the number of pine trees and wooden cylinders, respectively.

The next N lines contain two integers each, x_i and y_i, representing the coordinates of the i^{th} pine tree.

The following M lines contain two integers each, x_j and y_j, representing the coordinates of the j^{th} wooden cylinder.

Output:

Output K lines, each containing two integers, representing the coordinates of the selected wooden cylinders that form the protective fence. The coordinates should be printed in sorted order based on x-coordinates. In case of ties, sort based on y-coordinates.

Constraints:

$3 \leq N, M \leq 100$

$-10^6 \leq x_i, y_i, x_j, y_j \leq 10^6$

No three wooden cylinders lie on a straight line.

All coordinates of pine trees and wooden cylinders are unique.

Examples:

Input	Output
4 4 2 7 5 8 7 0 0 9 1 9 4 7 5 0 6 10 1 9 5 0 6 10	1 9 5 0 6 10

In the given example, by connecting wooden cylinders at coordinates (1,9), (5,0), and (6,10), a protective fence is created that encloses two pine trees (coordinates (2,7), (5,8)) as illustrated in the figure below.