D. Minimum Diameter

time limit per test: 1.5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given n points on the plane. You need to delete exactly k of them $(k < n)$ so that the diameter of the set of the remaining n - k points were as small as possible. The diameter of a set of points is the maximum pairwise distance between the points of the set. The diameter of a one point set equals zero.

Input

The first input line contains a pair of integers n, k $(2 \le n \le 1000, 1 \le k \le 30, k < n)$ — the numbers of points on the plane and the number of points to delete, correspondingly.

Next n lines describe the points, one per line. Each description consists of a pair of integers x_i, y_i $(0 \le x_i, y_i \le 32000)$ — the coordinates of the i-th point. The given points can coincide.

Output

Print k different space-separated integers from 1 to n — the numbers of points to delete. The points are numbered in the order, in which they are given in the input from 1 to n. You can print the numbers in any order. If there are multiple solutions, print any of them.

Examples

input
5 2 1 2 0 0 2 2 1 1 3 3
output
5 2

input
4 1 0 0 0 0 1 1 1 1
output
3