The 43rd Annual ACM
International Collegiate Programming Contest
Asia Regional – Seoul
Nationwide Internet Competition

Practice Problem A
Closest Pair
Time Limit: 1 Second

Given two sets P and Q of finitely many points in the plane, a closest pair of P and Q is a pair (p, q) of points $p \in P$ and $q \in Q$ such that the distance between p and q is the minimum among all pairs (p', q') with $p' \in P$ and $q' \in Q$.

Specifically, in this problem, by the *distance* between two points a and b in the plane, we mean:

$$d(a, b) = |x_a - x_b| + |y_a - y_b|$$

where x_a and y_a denote the x- and y-coordinates of point a, and x_b and y_b denote the x- and y-coordinates of point b. Then, a pair (p, q) with $p \in P$ and $q \in Q$ is a closest pair of P and Q if and only if the following holds:

$$d(p, q) = \min\{d(p', q') \mid p' \in P \text{ and } q' \in Q\}$$

Given two sets P and Q, write a program that computes the distance between a closest pair of P and Q and the number of distinct closest pairs of P and Q.

Note that you can assume the following on the input points in P and Q:

1. All the points in P lie on the horizontal line $y = c_1$ while all the points in Q lie on the horizontal line $y = c_2$ for some integers c_1 and c_2.
2. No two input points in P have the same coordinates; no two input points in Q have the same coordinates.

Input
Your program is to read from standard input. The input consists of four lines. The first line contains two integers, n ($1 \leq n \leq 500{,}000$) and m ($1 \leq m \leq 500{,}000$), where n is the number of points in set P and m is the number of points in set Q. In the second line, two integers c_1 and c_2 ($-10^8 \leq c_1, c_2 \leq 10^8$) are given in order, separated by a single space. In the third line, n distinct integers between -10^8 and 10^8, inclusively, are given, separated by a single space, that are the x-coordinates of the points in set P, while their y-coordinates are all the same as c_1. In the fourth line, m distinct integers between -10^8 and 10^8, inclusively, are given, separated by a single space, that are the x-coordinates of the points in set Q, while their y-coordinates are all the same as c_2.

Output
Your program is to write to standard output. Print exactly one line for the input. The line should contain two integers, separated by a single space, that represent the distance between a closest pair of P and Q and the number of closest pairs of P and Q in this order.

The following shows sample input and output for two test cases.

Sample Input 1	**Output for the Sample Input 1**
3 4 1 -3 3 0 6 -2 5 4 2	5 3

Sample Input 2	**Output for the Sample Input 2**
5 5 1 2 -4 -10 -2 0 -1 3 18 0 1 5	1 1