Problem F. Nearby Bicycles

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1s

With fast developments of information and communication technology, many cities today have established bicycle sharing systems. The key component of the system is to provide information on nearby bicycles to potential users.

Consider m bicycles and n customers, where each bicycle is located at coordinate (c_j, d_j) for $j = 1, 2, \cdots, m$, and each user i is located at coordinate (a_i, b_i) for $i = 1, 2, \cdots, n$. The distance between two coordinates (x, y) and (x', y') is measured by $\sqrt{(x - x')^2 + (y - y')^2}$. For each user $i = 1, 2, \cdots, n$, you are given a threshold s_i, your task is to return the total number of bicycles that are within a distance of s_i from user i.

Input

The test data may contain many test cases. Each test case contains four lines. The first line of each case contains two integers, m and n ($0 < m, n \leq 1000$). The second line contains the coordinates, $(c_1, d_1), (c_2, d_2), \cdots, (c_m, d_m)$, of bicycles $1, 2, \cdots, m$, respectively, which are separated by a space. The third line contains the coordinates, $(a_1, b_1), (a_2, b_2), \cdots, (a_n, b_n)$, of users $1, 2, \cdots, n$, respectively, which are separated by a space. The fourth line contains the thresholds, $s_1, s_2, \cdots, s_n$, of the n users. The last test case is followed by a line of two 0s. All the number of coordinate in the input is in the range $[-100000, 100000]$.

Output

The output for each test case contains a line of n integers, $k_1, k_2, \cdots, k_n$, where each k_i represents the total number of bicycles that are within a distance of s_i from user i, for $i = 1, 2, \cdots, n$.

Example

standard input	standard output
4 2 (0,0) (0,1) (1,0) (1,1) (0,0) (1,1) 1 1 0 0	3 3