

Land

Problem Description

Medan was once an area full of forests, but it can't be proud of them anymore. The mayor in that area has put a huge effort in preventing trees from being unnecessarily cut down. A local rich newcomer plans to buy a relatively large piece of square-shaped land and he wants to build a house on it. He also wants to make his house square-shaped, and as large as possible.

The land in Medan is divided into little 1×1 cells. One tree occupies exactly one cell. Since the land is big, it's very hard to find the largest square, with sides parallel to the sides of the land, without any tree on it. For a given map of the land that shows the positions of all the trees, you must find the largest square that contains no trees. The length of the square's side is the number of 1×1 cells along its side.

Besides that, you also want to know how many squares with size $S \times S$ can be formed with exactly K trees in it.

Note

The main Java class must be called **Land**, and be in the source file **Land.java**.

Input

The first line contains one integer N ($1 \leq N \leq 100$), where $N \times N$ is the size of the grid. The second line contains one integer T ($1 \leq T \leq 500$), where T is the number of trees in Medan. In the next T lines, each line contains two integers that represent the coordinates (r-th row and c-column) of a tree. The last line of the input contains two integers S ($1 \leq S \leq N$) and K ($1 \leq K \leq T$).

Output

Output the length of the side of the largest square with no trees in it and the number of squares with size S that contains exactly K trees on a single line, the two values separated by a blank.

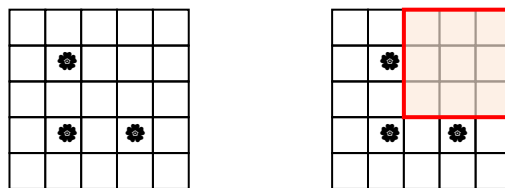
Sample Input

```
5
3
3 3
3 1
1 1
3 1
```

Sample Output

```
3 5
```

Explanation



The newcomer can buy a square-shaped land of length 3 with top-left corner at (0,2).

Explanation (continued...)

In the last line of the sample input, $S = 3$ and $K = 1$. There are 5 squares with length 3 containing exactly 1 tree, as shown below.

