# Epidemic

Oh no! It seems multiple cases of an unspecified fictional waterborne disease have been diagnosed in various areas in your city, and, although they have concluded that the source of the disease must be one or more public water fountains, the authorities are unsure how to respond. Thankfully, you have recently studied Voronoi diagrams and, inspired by John Snow's work during the 1854 London cholera epidemic, you set out to determine which of the water fountains are contaminated based on the location of the infected persons and their proximity to the fountains.

Pump Neighborhoods: Voronoi (address)

Write a program that, given the rectangular area of the city, the 2D locations of each water fountain, and the 2D locations of infected persons, will output which water fountain is most likely to be contaminated. The more infected persons are nearest to a certain water fountain, the more likely it is that that water fountain is contaminated.
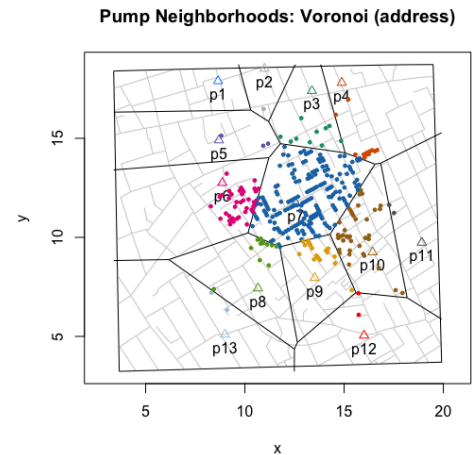
Input

The first line of input is a number 1 ≤ n ≤ 1000. The county stretches on the euclidean plane from -n to n on both axes. All water fountains and infected persons will fall within this range.

The next line of input gives F ≤ 1000, the number of water fountains, and P ≤ 1000, the number of infected persons. Then, the next F lines will give the x, y position of each fountain and the next P lines will give the x, y locations of the infected persons. For simplicity, all locations will be integers and no three sites or points will be collinear.

Output

Simply output the x,y coordinates of the water fountain that is most likely to be contaminated. In the case of a tie, output the water fountain that appeared first in the order.

Sample Input

```
10
3 3
4 6
6 6
2 9
9 2
7 3
9 9
```

Sample Output

```
6 6
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