COI '09 #1 Hrastovi

Time limit: 1.4s **Memory limit:** 32M

The government is planning to build a walkway for tourists in the middle of an oak forest. The forest can be represented as plane with N special lattice points representing oaks.

The walkway is represented as a rectangle with sides parallel to the axes. If the sides of walkway rectangle intersect any oak lattice points, such oaks need to be axed down. Oaks inside the rectangle do not represent problems and need not be cut down.

Ljubo is the state secretary of Forestry and a passionate nature lover, so he ordered the secretary of Tourism to provide him with a list of P possible rectangle walkways that are attractive enough to draw in tourists.

Ljubo plans to select the walkway that needs the smallest amount of oak trees to be cut down. Since we also like trees, would you be so kind and write a program that will determine the number of oaks that will be cut down for each walkway. Remember only the oaks **intersecting the sides** of the rectangle need to be cut.

Input Specification

The first line of input contains one integer N $(1 \leq N \leq 300\,000)$, number of oaks.

The next N lines contain two integers each X and Y $(1 \leq X, Y \leq 10^9)$ coordinates of oaks. There will be at most one oak on each lattice point.

The next line contains one integer P $(1 \leq P \leq 100\,000)$, number of walkways.

The next P lines contain four integers each X_1, Y_1, X_2 and Y_2 $(1 \leq X_1 < X_2 \leq 10^9, 1 \leq Y_1 < Y_2 \leq 10^9)$ coordinates of the lower left (X_1, Y_1) and upper right (X_2, Y_2) corner of the rectangle.

Output Specification

Output P integers, one per line, the number of oaks that need to be cut down for each walkway in the order they are presented in the input.

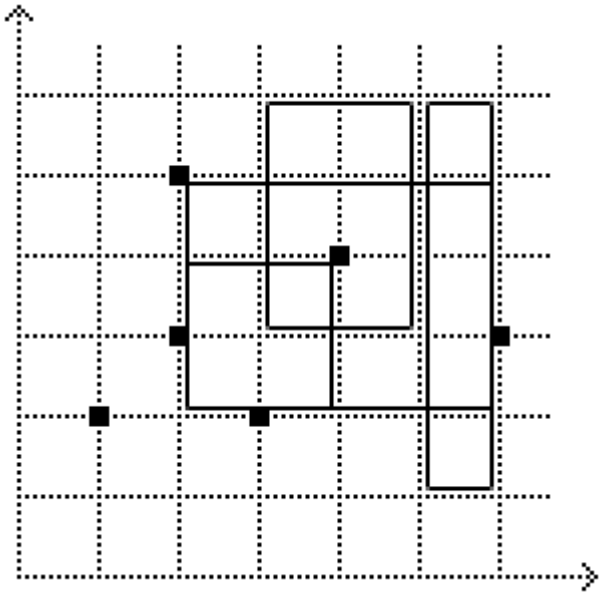
Scoring

Test data worth 30% of points has $(1 \leq X_1 < X_2 \leq 10^3, 1 \leq Y_1 < Y_2 \leq 10^3)$.

Test data worth 60% of points has $(1 \leq X_1 < X_2 \leq 10^6, 1 \leq Y_1 < Y_2 \leq 10^6)$.

Sample Input

```
6
1 2
3 2
2 3
2 5
4 4
6 3
4
2 2 4 4
2 2 6 5
3 3 5 6
5 1 6 6
```

Sample Output

```
3
4
0
1
```