

Problem F. Very New York

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 256 mebibytes

The year is 2211. Very New York is a city on Mars. The streets of the city make up a perfect grid. Each intersection in the city can be specified using a pair (x, y) of integers. The distance between two intersections (x_1, y_1) and (x_2, y_2) equals $|x_1 - x_2| + |y_1 - y_2|$.

An investor is interested in building a hotel in the city. Since hotel owners love to advertise hotels using phrases of the form “150 restaurants within half a mile”, the investor wants to learn the number of restaurants within a specific distance from each of the prospective locations.

Input

The first line contains R , the number of restaurants in the city ($0 \leq R \leq 100\,000$). The next R lines describe the coordinates of one restaurant each. Each of these lines contains two integers x and y ($1 \leq x, y \leq 1\,000\,000$).

The $(R+2)$ -nd line contains one integer Q which is the number of queries ($1 \leq Q \leq 100\,000$). The next Q lines contain one query each. Each query consists of a triple of integers x, y , and d ($1 \leq x, y, d \leq 1\,000\,000$).

Output

The output should consist of Q lines, each containing a single integer. The i -th line should contain the answer to the i -th query (x, y, d) : the number of restaurants at distance at most d from (x, y) .

Examples

standard input	standard output
3 2 2 3 1 4 1 2 3 2 1 4 2 1	2 1
5 3 2 3 6 4 6 2 4 4 6 2 4 4 2 3 4 3	3 5