Galaxy Quest

Problem ID: utah.galaxyques
CPU Time limit: 9 seconds
Memory limit: 1024 MB

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Source: School of Computing, University of Utah

NASA recently confirmed the discovery of parallel universes (PUs) occupying alternate dimensions. These universes are quite different from our own universe, in the following ways:

- Each PU is a two-dimensional square that stretches 10^9 light years from left to right and from top to bottom.
- Each PU has a galactic diameter of d light years, where d is an integer.
- Each star is exactly x light years from its universe's left edge and y light years from its universe's bottom edge, where x and y are non-negative integers.
- Stars are clustered into galaxies. Each galaxy consists of one or more stars. Each star is at most d light years from every other star in its galaxy. Any two stars from different galaxies are more than d light years apart.

  It is crucial to understand the implications of this. The locations of the stars determine the galaxies. The galaxy to which a star s belongs consists of s plus all other stars that are within d light years of s. Suppose you draw a circle of diameter d around all of the stars of a galaxy. Any star not belonging to the galaxy will be outside the circle and will be more than d light years from every star in the galaxy.

For each PU, NASA has obtained all of its stellar coordinates and has measured its value of d.

Given the description of a PU, NASA would like to be able to determine whether that PU has a galaxy that contains more than half of the stars in the PU. NASA has turned to you.

Input

The input describes a single PU. All numbers in the input are integers.

The first line of the input contains the PU's galactic diameter d ($1 \leq d \leq 10^6$) and star count k ($1 \leq k \leq 10^6$).

There are exactly k more lines. Each line contains the x ($0 \leq x \leq 10^9$) and y ($0 \leq y \leq 10^9$) coordinates of a star in the PU. No two of these lines are identical, as a black hole would result!

The star positions and d are guaranteed to obey the clustering constraint discussed above.

Output

If the PU described by the input has a galaxy containing more than half of the stars, display the number of stars in that galaxy. Otherwise, display NO.

Sample Input 1

```
10 4
45 46
90 47
45 54
90 43
```

Sample Output 1

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NO
```

Sample Input 2

```
20 7
1 1
100 100
1 3
101 101
3 1
102 102
3 3
```

Sample Output 2

```
4
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