Problem G
Furniture

POTYCZKI ALGORYTMICZNE

The 3rd Universal Cup, Stage 40: Potyczki. Limits: 1024 MB, 0.5 s. *21.06.2025*

Bajtazar has ordered N new pieces of furniture for his apartment and wants to arrange them all in his living room, which is a rectangle of dimensions $A \times B$. Each piece of furniture is also a rectangle, the ith piece has dimensions $c_i \times d_i$.

Each piece must be placed against one of the walls of length A, with its side of length c_i flush against that wall. Of course, no two pieces of furniture may overlap; they may at most touch along sides or at corners.

Help Bajtazar by writing a program that determines whether it is possible to place all N pieces of furniture in his living room.

You have T independent test cases to solve.

Input

The first line contains a single integer T ($1 \leq T \leq 30$), the number of test cases.

In the first line of each test case, there are three integers A, B, N ($1 \leq A, B \leq 10^6$, $1 \leq N \leq 1000$) denoting the dimensions of Bajtazar's living room and the number of pieces of furniture he has ordered. Each of the next N lines contains two integers c_i, d_i ($1 \leq c_i \leq A$, $1 \leq d_i \leq B$), the dimensions of the i-th piece of furniture.

The sum of N over all test cases does not exceed 1000.

Output

Output T lines. On the i-th line output the word `TAK` (Polish for yes) if it is possible to place all the furniture in the i-th test case, or `NIE` (Polish for no) otherwise.

Example

For the input data:

```
4
9 7 6
2 2
3 2
4 5
1 5
1 3
6 2
3 3 3
3 1
1 1
3 1
3 3 3
1 3
1 3
1 3
3 3 2
2 2
2 2
```

the correct result is:

```
TAK
NIE
TAK
NIE
```

Example Explanation: A valid arrangement of the furniture in the first test case is shown below: