amppz

Cross Spider — KRZ

Available memory: 32 MB.

The Bytean cross spider (*Araneida baitoida*) is known to have an amazing ability. Namely, it can instantly build an arbitrarily large spiderweb as long as it is contained in a single plane. This ability gives the spider an opportunity to use a fancy hunting strategy. It does not need to wait until a fly is caught in an already built spiderweb; if only the spider knows the current position of a fly, it can instantly build a spiderweb to catch the fly.

A cross spider has just spotted n flies in Byteasar's garden. Each fly is flying still in some point of a 3D space. The spider is wondering if it can catch all the flies with a single spiderweb. Write a program that answers the spider's question.

Input

The first line of the input contains an integer n ($1 \leqslant n \leqslant 100\,000$). The following n lines contain a description of the flies in a 3D space: the i-th line contains three integers x_i, y_i, z_i ($-1\,000\,000 \leqslant x_i, y_i, z_i \leqslant 1\,000\,000$) giving the coordinates of the i-th fly (a point in a 3-dimensional Euclidean space). No two flies are located in the same point.

Output

Your program should output a single word `TAK` (i.e., *yes* in Polish) if the spider can catch all the flies with a single spiderweb. Otherwise your program should output the word `NIE` (*no* in Polish).

Example

For the input data:

```
4
0 0 0
-1 0 -100
100 0 231
5 0 15
```

the correct result is:

```
TAK
```

whereas for the input data:

```
4
0 1 0
-1 0 -100
100 0 231
5 0 15
```

the correct result is:

```
NIE
```