Problem A. Decent Sequence

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds
Memory limit:	512 megabytes

The array a is **decent** if it can be split into two consecutive parts (possibly empty), such that the first one (the prefix) is non-decreasing, and the second (the suffix) is non-increasing. For example, $[1, 2, 3]$, $[1, 2, 2, 1]$ and $[3]$ are decent, while $[3, 2, 2, 8]$ is not.

There is an array a consisting of n integers, which is not given to you. You are, however, given n integers l_i and n integers r_i. It is known that for all indices i from 1 to n we have $l_i \le a_i \le r_i$. Is a decent?

You have to give one of the three answers:

1. a is definitely decent.
2. a is definitely not decent.
3. Neither of the above is the case.

Input

The first line contains a single integer n ($1 \le n \le 10^6$), the length of a.

Each of the following n lines contains two integers l_i and r_i ($1 \le l_i \le r_i \le 10^9$) describing the range containing the element a_i.

Output

Output "TAK" (without quotes) if a is definitely decent.

Output "NEIN" (without quotes) if a is definitely not decent.

Output an arbitary string consisting of at least five but not more than 100 lowercase or capital english letters otherwise. *If you output something really inappropriate you might get Presentation Error. Both of the possible answers in the samples are not considered inappropriate.*

Examples

standard input	standard output
3 3 4 2 5 1 1	TAK
4 3 4 1 3 1 2 3 10	NEIN
3 1 10 1 10 1 10	NEITHER
4 1 2 1 1 1 1 1 2	Secret