

Task: REM

Renovation



XXVI OI, Stage III, Day one. Source file `rem.*` Available memory: 512 MB.

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After weeks of hard toil and mental distress, Byteasar is nearly done with renovating his new apartment. Only a single wall remains to be painted. Byteasar has partitioned it into n vertical strips of equal width, each to be painted in one of k colors. For convenience, we number the colors from 1 to k . Then he went shopping, and got a bit carried away. Namely, he bought a promotional set of two color paint rollers with pre-applied paint. Each roller has two colors of paint (which may be the same), left and right, and allows Byteasar to paint two adjacent strips in those colors. The set is indeed quite versatile, containing k^2 rollers with all possible pairs of colors, each exactly once. On the other hand, each roller is one-use only, i.e., can be used only for a single pair of adjacent strips.

Byteasar has already chosen the color scheme for the wall: he wants to paint its successive strips in colors a_1, a_2, \dots, a_n . Each strip can be painted over multiple times (with different rollers), but every time with the same color. Help Byteasar in determining whether his color scheme of choice can be realized.

Input

In the first line of the standard input, there is a single integer t ($1 \leq t \leq 10$) that specifies the number of test data sets. Next, these data sets are described.

The first line of each description contains two integers n and k ($1 \leq k \leq n, n \geq 2$), separated by a single space, which specify the number of strips on the wall and the number of colors respectively. The second line of a description contains a sequence of n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq k$), separated by single spaces, which specify the desired colors of successive strips of the wall.

Output

Your program should print t lines to the standard output. If the color scheme of the i -th test data set (for $1 \leq i \leq t$) cannot be realized, then the single word **NIE** (Polish for *no*) should be printed to the i -th output line, otherwise the word **TAK** (Polish for *yes*) should be printed.

Example

For the input data:

```
2
4 3
2 3 2 3
7 3
2 2 2 3 2 3 1
```

the correct result is:

```
NIE
TAK
```

Explanation for the example: The answer to the first data set is negative: to paint the wall, Byteasar would have to use a roller with paint colors (2,3) twice. The color scheme from the second data set can be realized by using rollers with paint colors (2,2), (2,3), (3,2), and (3,1).

Sample grading tests:

1ocen: $t = 8$, this test set contains all tests with $n = 4$, $k = 2$, and $a_1 = 2$;

2ocen: $t = 2$, in both tests $n = 150\,000$; in the first one $k = 150\,000$ and $a_i = i$ for $1 \leq i \leq n$, whereas in the second one $k = 4$ and $a_i = 1$; the answers are **TAK** and **NIE** respectively.

Grading

The set of tests consists of the following subsets. Within each subset, there may be several tests.

Time limits for particular subsets are published in SIO.

Subset	Conditions	Score
1	$n \leq 20$	10
2	$n \leq 40$	15
3	$n \leq 5000$	35
4	$n \leq 150\,000$	40