



Chef and Operations

Problem Code: **QABC**



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All Submissions

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Successful Submissions



Chef has two sequences A and B , each with length N . He can apply the following magic operation an arbitrary number of times (including zero): choose an index i ($1 \leq i \leq N - 2$) and add 1 to A_i , 2 to A_{i+1} and 3 to A_{i+2} , i.e. change A_i to $A_i + 1$, A_{i+1} to $A_{i+1} + 2$ and A_{i+2} to $A_{i+2} + 3$.

Chef asks you to tell him if it is possible to obtain sequence B from sequence A this way. Help him!

Input

- The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.
- The first line of each test case contains a single integer N .
- The second line contains N space-separated integers A_1, A_2, \dots, A_N .
- The third line contains N space-separated integers B_1, B_2, \dots, B_N .

Output

For each test case, print a single line containing the string "TAK" if it is possible to reach sequence B or "NIE" otherwise.

Constraints

- $1 \leq T \leq 1,000$
- $1 \leq N \leq 10^5$
- $0 \leq A_i \leq 10^8$ for each valid i
- $0 \leq B_i \leq 10^8$ for each valid i
- the sum of N for all test cases does not exceed $5 \cdot 10^5$

Example Input

```
2
5
0 0 0 0 0
1 2 4 2 3
5
0 0 0 0 0
1 2 4 2 4
```

Example Output

Explanation

Example case 1: Chef can apply the operation at index $i = 3$ and get the sequence $(0, 0, 1, 2, 3)$. Afterwards, he can apply that operation at index $i = 1$ and get the sequence $(1, 2, 4, 2, 3) = B$.

Example case 2: It is impossible to reach sequence B .

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Tags: [mgch \(/tags/problems/mgch/\)](/tags/problems/mgch/)

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Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: C, CPP14, JAVA, PYTH, PYTH 3.6, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, rust, SCALA, swift, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, kotlin, PERL6, TEXT, SCM chicken, PYP3, CLOJ, COB, FS

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