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SHawnHardy
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King's Phone

Time Limit: 2000/1000 MS (Java/Others) Memory Limit: 65536/65536 K (Java/Others)
Total Submission(s): 2484 Accepted Submission(s): 593

Problem Description

In a military parade, the King sees lots of new things, including an Andriod Phone. He becomes interested in the pattern lock screen.

The pattern interface is a 3×3 square lattice, the three points in the first line are labeled as 1, 2, 3, the three points in the second line are labeled as 4, 5, 6, and the three points in the last line are labeled as 7, 8, 9. The password itself is a sequence, representing the points in chronological sequence, but you should follow the following rules:

- The password contains at least four points.
- Once a point has been passed through. It can't be passed through again.
- The middle point on the path can't be skipped, unless it has been passed through (3427 is valid, but 3724 is invalid).

His password has a length for a positive integer $k(1 \le k \le 9)$, the password sequence is $s_1, s_2 \dots s_k (0 \le s_i < INT_MAX)$, he wants to know whether the password is valid. Then the King throws the problem to you.

Input

The first line contains a number $T(0 < T \le 100000)$, the number of the testcases.

For each test case, there are only one line, the first first number k, represent the length of the password, then k numbers, separated by a space, representing the password sequence $s_1, s_2 \dots s_k$.

Output

Output exactly T lines. For each test case, print 'valid' if the password is valid, otherwise print 'invalid'

Sample Input

3 4 1 3 6 2

4 6 2 1 3 4 8 1 6 7

Sample Output

invalid valid

valid

hint:

For test case #1: The path $\$1\$ rightarrow 3\$ skipped the middle point \$2\$, so it's invalid.

For test case #2: The path \$1\rightarrow 3\$ doesn't skipped the middle point \$2\$, because the point 2 has been through, so it's valid.

For test case #2: The path \$8\rightarrow 1 \rightarrow 6 \rightarrow 7\$ doesn't have any the middle point \$2\$, so it's valid.

Source

BestCoder Round #75

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wange2014 | We have carefully selected several similar problems for you: 5659 5658 5657 5656 5655

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Administration