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 $k(1 \leq k \leq 9)$, the password sequence is $s_1, s_2 \ldots s_k (0 \leq s_i < INT\_MAX)$, he wants to know whether the password is valid. Then the King throws the problem to you.

Input

The first line contains a number $T(0 < T \leq 100000)$, 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 $s_1, s_2 \ldots s_k$.

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

Recommend

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