Problem B. Nim Game II

Time limit 1000 ms
Mem limit 524288 kB

There are n heaps of sticks and two players who move alternately. On each move, a player chooses a non-empty heap and removes 1, 2, or 3 sticks. The player who removes the last stick wins the game.

Your task is to find out who wins if both players play optimally.

Input

The first input line contains an integer t: the number of tests. After this, t test cases are described:

The first line contains an integer n: the number of heaps.

The next line has n integers $x_1, x_2, \ldots, x_n$: the number of sticks in each heap.

Output

For each test case, print "first" if the first player wins the game and "second" if the second player wins the game.

Constraints

- $1 \leq t \leq 2 \cdot 10^5$
- $1 \leq n \leq 2 \cdot 10^5$
- $1 \leq x_i \leq 10^9$
- the sum of all n is at most $2 \cdot 10^5$

Example

Input	Output
3 4 5 7 2 5 2 4 1 3 4 4 4	first first second