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## The game of Nim (2)

P49499\_en

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This is another problem about the game of Nim, which is thoroughly explained in problem [problem://problemsjutge.org/problems/upc/2004-semi1/5.pbm](https://problemsjutge.org/problems/upc/2004-semi1/5.pbm). But here, we may have a huge number of sets, each with a huge number of marbles.

### Input

Input consists of several cases. Every case begins with the number of sets  $n$ , followed by the number of marbles of each set, all between 0 and  $10^9$ . Assume  $0 \leq n \leq 10^5$ .

### Output

For every case, tell if it is a winning or a losing configuration.

### Hint

You should use a mathematical trick to solve this problem.

### Sample input 1

```
6 1 1 0 0 5 0
1 2
0
4 0 3 3 0
5 1000 43210 17 123456 42
5 1000 43210 17 43801 42
```

### Sample output 1

```
winning
winning
losing
losing
winning
losing
```

### Problem information

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