



Tower Breakers, Again!

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Problem

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Two players (numbered **1** and **2**) are playing a game of Tower Breakers! The rules of the game are as follows:

- Player **1** always moves first.
- Initially there are **N** towers of various heights.
- The players move in alternating turns. In each turn, a player must choose a tower of height **X** and break it down into **Y** towers, each of height **Z** . The numbers **Y** and **Z** must satisfy **$Y \times Z = X$** and **$Y > 1$** .
- If the current player is unable to make any move, they lose the game.

Given the value of **N** and the respective height values for all towers, can you determine who will win, assuming both players always move *optimally*? If the first player wins, print **1**; otherwise, print **2**.

Input Format

The first line contains an integer, **T** , denoting the number of test cases.

The **$2T$** subsequent lines define the test cases. Each test case is described by two lines:

1. An integer, **N** , denoting the number of towers.
2. **N** space-separated integers, **h_0, h_1, \dots, h_{N-1}** , where each **h_i** describes the height of tower **i** .

Constraints

- $1 \leq T \leq 200$
- $1 \leq N \leq 100$
- $1 \leq h_i \leq 10^5$

Output Format

For each test case, print a single integer denoting the winner (i.e., either **1** or **2**) on a new line.

Sample Input

```
2
2
1 2
3
1 2 3
```

Sample Output

```
1
2
```

Explanation

In the first test case, the first player simply breaks down the second tower of height **2** into two towers of height **1** and wins.

In the second test case, there are only two possible moves:

- Break the second tower into **2** towers of height **1**.
- Break the third tower into **3** towers of height **1**.

Whichever move player **1** makes, player **2** can make the other move and win the game.

[f](#) [t](#) [in](#)

Submissions: [926](#)

Max Score: 30

Difficulty: Medium

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☆☆☆☆☆

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Current Buffer (saved locally, editable)  

Java 7  

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

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☐ Test against custom input

Run Code

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