

# H

## Marbles in Jars

Input: Standard Input  
Output: Standard Output



There are  $N$  jars. Each of the jars are labeled from 1 to  $N$ . Each jar contains marbles. The quantity of marbles in the jars is  $M_1, M_2, M_3 \dots M_n$ , where  $M_1$  is the number of marbles in the first jar and so on. All the jars contain marbles that weighs 1 gram, except one jar that contains marbles weighing 1.1 grams. Let's call this jar "**The Fat Jar**".

You have a weighing machine, but you are allowed to use it **exactly once**. You need to find out the fat jar.

One neat way to find the fat jar is, (assuming we have enough marbles in each jar) take 1 marble from the 1<sup>st</sup> jar, 2 from 2<sup>nd</sup> jar, 3 from 3<sup>rd</sup> jar and so on. Let's say we have 4 jars in total. So ideally, the marbles should weigh 10grams collectively. Suppose, it weighs 10.3 grams. What does that tell us? The third jar has to be the fat jar. Because the extra 0.3 grams must have come from the three marbles that we took from the third jar.

Interestingly, there are several other ways to find out the fat jar. We call each way a "**Strategy**". Formally, a strategy is an array of  $N$  positive numbers:  $X_1, X_2, X_3 \dots X_n$ , such that we take  $X_1$  marbles from the first jar,  $X_2$  marbles from the second jar and so on. We weigh  $X_1 + X_2 + X_3 + \dots + X_n$  marbles in the weighing machine and try to find out the fat jar. A strategy is called "**Winning**" when it is always possible to find the fat jar following that strategy.

Given  $N$  jars with the number of marbles in each jar, how many different winning strategies are there? Two strategies are different if there exists an index  $i$ , for which  $X_i$  is different between those strategies.

### Input

First line contains the  $T$  ( $0 < T \leq 100$ ), the number of test cases. Each case starts with  $N$  ( $1 \leq N \leq 100$ ). Next line contains  $N$  integers  $M_1, M_2, M_3 \dots M_n$ . (For all  $i$ ,  $1 \leq i \leq N$ ,  $0 \leq M_i \leq 100$ ).

### Output

For each case, print one line, "**Case C: A**" (without the quotes). Here  $C$  is the case number and  $A$  is the answer that case. As the answer can be pretty huge, print the answer modulo **1,000,000,007**.

### Sample Input

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

### Output for Sample Input

```
Case 1: 1
Case 2: 0
Case 3: 2
```

**Explanation:**

The winning strategies in case 3 are  $\{1, 2\}$  and  $\{2, 1\}$ .

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