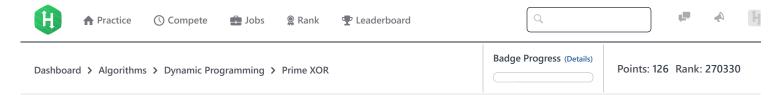
16/11/2017 HackerRank







Problem Submissions Leaderboard Discussions Editorial

Penny has an array of n integers, $[a_0, a_1, \dots, a_{n-1}]$. She wants to find the number of unique multisets she can form using elements from the array such that the bitwise XOR of all the elements of the multiset is a prime number. Recall that a *multiset* is a set which can contain duplicate elements.

Given q queries where each query consists of an array of integers, can you help Penny find and print the number of valid multisets for each array? As these values can be quite large, modulo each answer by $10^9 + 7$ before printing it on a new line.

Input Format

The first line contains a single integer, q, denoting the number of queries. The $2 \cdot q$ subsequent lines describe each query in the following format:

- 1. The first line contains a single integer, n_i denoting the number of integers in the array.
- 2. The second line contains n space-separated integers describing the respective values of $a_0, a_1, \ldots, a_{n-1}$.

Constraints

- $1 \le q \le 10$
- $1 \le n \le 100000$
- $3500 \le a_i \le 4500$

Output Format

On a new line for each query, print a single integer denoting the number of unique multisets Penny can construct using numbers from the array such that the bitwise XOR of all the multiset's elements is prime. As this value is quite large, your answer must be modulo $10^9 + 7$.

Sample Input

```
1
3
3511 3671 4153
```

Sample Output

4

Explanation

The valid multisets are:

- $\{3511\} \rightarrow 3511$ is prime.
- $\{3671\} \to 3671$ is prime.
- $\{4153\} o 4153$ is prime.
- $\{3511, 3671, 4153\} \rightarrow 3511 \oplus 3671 \oplus 4153 = 5081$, which is prime.

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Test against custom input

Because there are four valid multisets, we print the value of $4\% (10^9 + 7) = 4$ on a new line.

```
Submissions:700
                                                                                                                   Max Score:50
                                                                                                                   Difficulty: Medium
                                                                                                                   Rate This Challenge:
                                                                                                                   \triangle \triangle \triangle \triangle \triangle \triangle
                                                                                                                   More
 Current Buffer (saved locally, editable) & 49
                                                                                                    Java 7
 1 ▼ import java.io.*;
 2 import java.util.*;
   import java.text.*;
 4 import java.math.*;
 5 import java.util.regex.*;
 6
 7 ▼ public class Solution {
 8 ▼
         public static void main(String args[] ) throws Exception {
             /* Enter your code here. Read input from STDIN. Print output to STDOUT */
 9 ▼
10
11
    }
12
                                                                                                                                Line: 1 Col: 1
```

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Run Code

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1 Upload Code as File