Ejercicios para jueces online
Semana 1

Ejercicios introductorios

1. Dado un número N, determina si es primo o no.

Entrada: Un entero N (1 ≤ N ≤ 10^6). Es decir 1 ≤ N ≤ 1,00,000

Salida: "SI" si N es primo, "NO" en caso contrario.

2. Enunciado: Dado un número entero N, calcula la suma de sus dígitos.

Entrada: Un entero N (1 ≤ N ≤ 10^9). Es decir 1 ≤ N ≤ 1,000,000,000

Salida: La suma de los dígitos de N.

3. Enunciado: Dado un array de N enteros, encuentra el número que más veces aparece.

Si hay varios con la misma frecuencia, devuelve el menor.

Entrada:

Un entero N (1 ≤ N ≤ 10^5).

Un array de N enteros (-10^9 ≤ array[i]≤ 10^9).

Salida: El número con mayor frecuencia.

Ejemplo de entrada

6

4 2 2 8 4 4

Salida esperada

4

Hacker Rank

4. **A pointer in C++ is used to share a memory address among different contexts (primarily** functions). They are used whenever a function needs to modify the content of a variable, but it does not have ownership.

In order to access the memory address of a variable, , prepend it with sign. For example, &val returns the memory address of. This memory address is assigned to a pointer and can be shared among functions. For example, assigns the memory address of to pointer . To access the content of the memory pointed to, prepend the variable name with a *. For example, *p will return the value stored in and any modification to it will be performed on.

Source: https://www.hackerrank.com/challenges/c-tutorial-pointer/problem?isFullScreen=true

5. **Given an array nums sorted in non-decreasing order, return the maximum between the number of positive integers and the number of negative integers.**

In other words, if the number of positive integers in nums is pos and the number of negative integers is neg, then return the maximum of pos and neg.

Note that 0 is neither positive nor negative.

Example 1:
Input: nums = [-2,-1,-1,1,2,3]
Output: 3
Explanation: There are 3 positive integers and 3 negative integers. The maximum count among them is 3.

Example 2:
Input: nums = [-3,-2,-1,0,0,1,2]
Output: 3
Explanation: There are 2 positive integers and 3 negative integers. The maximum count among them is 3.

Example 3:

Input: nums = [5,20,66,1314]
Output: 4
Explanation: There are 4 positive integers and 0 negative integers. The maximum count among them is 4.

Constraints:
1 <= nums.length <= 2000
-2000 <= nums[i] <= 2000
nums is sorted in a non-decreasing order.

Soirce: https://leetcode.com/problems/maximum-count-of-positive-integer-and-negative-integer?envType=daily-question&envId=2025-03-12

Ejercicios sobre manipulación de bits

Codeforces

6. **A. Team.** One day three best friends Petya, Vasya and Tonya decided to form a team and take part in programming contests. Participants are usually offered several problems during programming contests. Long before the start the friends decided that they will implement a problem if at least two of them are sure about the solution. Otherwise, the friends won't write the problem's solution.

This contest offers n problems to the participants. For each problem we know, which friend is sure about the solution. Help the friends find the number of problems for which they will write a solution.

Source: https://codeforces.com/problemset/problem/231/A

Input
The first input line contains a single integer n (1 ≤ n ≤ 1000) — the number of problems in the contest. Then n lines contain three integers each, each integer is either 0 or 1. If the first number in the line equals 1, then Petya is sure about the problem's solution, otherwise he isn't sure. The second number shows Vasya's view on the solution, the third number shows Tonya's view. The numbers on the lines are separated by spaces.

Output
Print a single integer — the number of problems the friends will implement on the contest.

Examples
Input
```
3
1 1 0
1 1 1
1 0 0
```
Output
```
2
```

Input
```
2
1 0 0
0 1 1
```
Output
```
1
```

7. **A. XOR Mixup.** There is an array a with $n-1$ integers. Let x be the [bitwise XOR](#) of all elements of the array. The number x is added to the end of the array a (now it has length n), and then the elements are shuffled.

You are given the newly formed array a. What is x? If there are multiple possible values of x, you can output any of them.

Input

The input consists of multiple test cases. The first line contains an integer t ($1 \le t \le 1000$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains an integer n ($2 \le n \le 100$) — the number of integers in the resulting array a.

The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($0 \le a_i \le 127$) — the elements of the newly formed array a.

Additional constraint on the input: the array a is made by the process described in the statement; that is, some value of x exists.

Output

For each test case, output a single integer — the value of x, as described in the statement. If there are multiple possible values of x, output any of them.

Examples
Input
```
3
1 1 0
1 1 1
1 0 0
```
Output
```
2
```

Input
```
2
1 0 0
0 1 1
```
Output
```
1
```