Tall

Time limit: 10.0s **Memory limit:** 256M

Ruby "200cm" Sun has a problem: she cannot reach the freezer section of her fridge! To assist her with the vertical challenge, she installed a retractable stepladder on the side of the fridge to help her reach the top.

Additionally, to improve her chances of making CCO this year, she configured the stepladder to give her a programming challenge she needs to complete every time she wants to use it. However, yesterday she got a problem she didn't know how to solve. Can you help her solve it?

The problem is as follows:

> There is a sequence of N numbers $a_1, a_2, \ldots, a_N$. For a constant value c, define $b_1, b_2, \ldots, b_N$ as a sequence such that $b_i = a_i \oplus c$. Can you select a constant c such that the MEX of $b_1, b_2, \ldots, b_N$ is maximized?
>
> Note: the MEX of a sequence of non-negative integers $b_1, b_2, \ldots, b_N$ is defined as the smallest integer X such that $X \geq 0$ and $b_i \neq X$ for all $1 \leq i \leq N$.

Constraints

For all subtasks:

$T \in \{1, 30\}$ (T is the number of test cases)

$1 \leq N \leq 2 \times 10^5$

$0 \leq a_i \leq 10^9$

Subtask 1 [10%]

$1 \leq N \leq 200$

$0 \leq a_i \leq 200$

Subtask 2 [10%]

$1 \leq N \leq 200$

Subtask 3 [20%]

$1 \leq N \leq 2\,000$

Subtask 4 [60%]

No additional constraints.

Input Specification

The first line of input contains T, the number of test cases. Next, T test cases follow.

The first line of each test case contains the integer N.

The second line of each test case contains the integers $a_1, a_2, \ldots, a_N$.

Output Specification

For each test case, output two space separated integers: the maximum possible MEX of $b_1, b_2, \ldots, b_N$ and the value of c that maximizes that MEX. **If multiple values of c exist, output the smallest one.**

The output of each test case should be on its own line.

Sample Input

```
1
5
11 4 5 23 10
```

Sample Output

```
2 4
```

Explanation

If we choose $c = 4$, then we get the sequence $15, 0, 1, 19, 14$ which has a MEX of 2 (and it can be shown that the MEX will never be greater than 2). While there are other values of c that give us a MEX of 2, 4 is the smallest one of them.