

Problem A. Add One

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 1024 mebibytes

Given n integers a_1, a_2, \dots, a_n , you want to perform the following operation exactly $n - 1$ times.

- Choose two integers x and y in the sequence, remove them, and add a number with the value $x \oplus y$.

Since this alone is just too boring, you can additionally choose a number and add one to it at any moment. You must perform the add-one operation **exactly once**.

Eventually, only one number will be left in this sequence, and you need to maximize this remaining number. Print the maximum value of the remaining number.

Input

The first line of the input contains a single integer n ($1 \leq n \leq 10^6$).

The next line of the input contains n integers a_1, a_2, \dots, a_n ($0 \leq a_i < 2^{60}$).

Output

Output a single line containing a single integer: the maximum value of the remaining number.

Examples

standard input	standard output
4 1 2 1 2	7
5 1 2 3 4 5	14
6 1 2 4 7 15 31	47

Note

In the first example, the optimal strategy is:

- Choose 1 and 2: $[1, 2, 1, 2] \rightarrow [1, 2, 3]$
- Choose 1 and 2: $[1, 2, 3] \rightarrow [3, 3]$
- Add one to the number 3: $[3, 3] \rightarrow [3, 4]$
- Choose 3 and 4: $[3, 4] \rightarrow [7]$