XOR Maximization

Given a set of integers S = { a_1, a_2, a_3, ... $a_{|S|}$ }, we define a function X on S as follows:

X(S) = a_1 ^ a_2 ^ a_3 ^ ... ^ $a_{|S|}$.

(^ stands for bitwise 'XOR' or 'exclusive or')

Given a set of N integers, compute the maximum of the X-function over all the subsets of the given starting set.

Input

The first line of input contains a single integer N, $1 <= N <= 10^5$.

Each of the next N lines contain an integer a_i, $1 <= a_i <= 10^{18}$.

Output

To the first line of output print the solution.

Example

Input:

```
3
1
2
4
```
Output:

```
7
```