## Yet Another Minimax Problem

You are given $n$ non-negative integers, $a_{0}, a_{1}, \ldots, a_{n-1}$. We define the score for some permutation ( $p$ ) of length $n$ to be the maximum of $a_{p_{i}} \oplus a_{p_{i+1}}$ for $0 \leq i<n-1$.

Find the permutation with the minimum possible score and print its score.
Note: $\oplus$ is the exclusive-OR (XOR) operator.

## Input Format

The first line contains single integer, $n$, denoting the number of integers.
The second line contains $n$ space-separated integers, $a_{0}, a_{1}, \ldots, a_{n-1}$, describing the respective integers.

## Constraints

- $2 \leq n \leq 3000$
- $0 \leq a_{i} \leq 10^{9}$


## Output Format

Print a single integer denoting the minimum possible score.
Sample Input 0

```
4
2 3 4
```


## Sample Output 0

5

## Sample Input 1

```
3
123
```


## Sample Output 1

2

## Explanation

Sample Case 0:
The permutation with the minimum score is $(3,2,1,4)$ :
$a_{1} \oplus a_{2}=2 \oplus 1=3$
$a_{2} \oplus a_{3}=1 \oplus 4=5$
Because the permutation's score is the maximum of these values, we print 5 on a new line.

## Sample Case 1:

The permutation with the minimum score is $(1,3,2)$ :
$a_{0} \oplus a_{1}=1 \oplus 3=2$
$a_{1} \oplus a_{2}=3 \oplus 2=1$
Because the permutation's score is the maximum of these values, we print 2 on a new line.

