

E. Sausage Maximization

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

The Bitlandians are quite weird people. They have their own problems and their own solutions. They have their own thoughts and their own beliefs, they have their own values and their own merits. They have their own dishes and their own sausages!

In Bitland a sausage is an array of integers! A sausage's deliciousness is equal to the bitwise excluding OR (the *xor* operation) of all integers in that sausage.

One day, when Mr. Bitkoch (the local cook) was going to close his BitRestaurant, BitHaval and BitAryo, the most famous citizens of Bitland, entered the restaurant and each ordered a sausage.

But Mr. Bitkoch had only one sausage left. So he decided to cut a prefix (several, may be zero, first array elements) of the sausage and give it to BitHaval and a postfix (several, may be zero, last array elements) of the sausage and give it to BitAryo. Note that one or both pieces of the sausage can be empty. Of course, the cut pieces mustn't intersect (no array element can occur in both pieces).

The pleasure of BitHaval and BitAryo is equal to the bitwise XOR of their sausages' deliciousness. An empty sausage's deliciousness equals zero.

Find a way to cut a piece of sausage for BitHaval and BitAryo that maximizes the pleasure of these worthy citizens.

Input

The first line contains an integer n ($1 \leq n \leq 10^5$).

The next line contains n integers a_1, a_2, \dots, a_n ($0 \leq a_i \leq 10^{12}$) — Mr. Bitkoch's sausage.

Please, do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Output

Print a single integer — the maximum pleasure BitHaval and BitAryo can get from the dinner.

Examples

input
2 1 2
output
3

input
3 1 2 3
output
3

input
2 1000 1000
output

