Spirited Away

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4 seconds
Memory limit:	1024 megabytes

You know a freak in Forgotten Hill. Today, the freak wants you to solve the following problem:

- Given a 32-dimensional vector space $\mathbb{F}_2^{32}$ over the finite field $\mathbb{F}_2$ and n elements $a_1, a_2, \ldots, a_n$ in $\mathbb{F}_2^{32}$. Find $\left|\left\{\text{span}_{\mathbb{F}_2}\{a_l, a_{l+1}, \ldots, a_r\} \mid 1 \le l \le r \le n\right\}\right|$.

The freak once told Little Cyan Fish how to solve his problem. However, the related memories have been blurred by the freak. Therefore, Little Cyan Fish hopes you can solve the freak's problem. If you are not familiar with the related notations, Little Cyan Fish describes the above problem in natural language as:

- Given a sequence of non-negative integers $a_1, a_2 \ldots a_n$ of length n ($0 \le a_i < 2^{32}$).
- Define the value of $B(l, r)$ as: choose any number of numbers (can be 0) from $a_l, a_{l+1} \ldots a_r$, and XOR them all together, the set of all possible XOR values obtained. In other words:

$$B(l,r) = \left\{ \bigoplus_{i=l}^{r} c_i a_i \;\middle|\; c_i \in \{0,1\} \right\}$$

- where $\oplus$ denotes the bitwise XOR operation. For example, $4 \oplus 6 = 2$, $1 \oplus 2 = 3$.
- Find how many essentially different sets $B(l, r)$ there are for all $1 \le l \le r \le n$.

Input

There are multiple test cases. The first line of the input contains a single integer T ($1 \le T$), indicating the number of test cases.

For each test case, the first line of the input contains an integer n ($1 \le n \le 10^5$).

The next line contains n integers a_i ($0 \le a_i < 2^{32}$).

It is guaranteed that the sum of n over all test cases does not exceed 10^5.

Output

For each test case, output a single line containing one integer, indicating the number of essentially different $B(l, r)$ sets, i.e., $\left|\left\{\text{span}_{\mathbb{F}_2}\{a_l, a_{l+1}, \ldots, a_r\} \mid 1 \le l \le r \le n\right\}\right|$.

Example

standard input	standard output
5 3 1 2 3 4 10 12 17 33 6 1 0 9 8 7 3 8 9012 91829 9819 78 237 862 7672 2 10 0 1 2 4 8 16 32 64 128 256	4 10 12 36 46

Note

For the first sample test case, valid sets include: $\{0, 1\}$, $\{0, 2\}$, $\{0, 3\}$, $\{0, 1, 2, 3\}$.