

AND-OR closure

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Given a set A of n non-negative integers, we define its **AND-OR closure** as the B with smallest size such that:

- $A \subseteq B$
- If $x, y \in B$, then $(x \text{ AND } y) \in B$
- If $x, y \in B$, then $(x \text{ OR } y) \in B$

Find the size of the AND-OR closure of A .

Here **AND** denotes the bitwise AND operation, and **OR** denotes the bitwise OR operation.

Input

The first line of the input contains a single integer n ($1 \leq n \leq 2 \cdot 10^5$) — the size of the set A .

The second line contains n distinct integers a_1, a_2, \dots, a_n ($0 \leq a_i < 2^{40}$) — which represent the elements of A .

Output

Print the size of the AND-OR closure of A .

Examples

standard input	standard output
4 0 1 3 5	5
5 0 1 2 3 4	8

Note

In the first sample, the AND-OR closure of A is $\{0, 1, 3, 5, 7\}$.

In the second sample, the AND-OR closure of A is $\{0, 1, 2, 3, 4, 5, 6, 7\}$.