

A. The Brand New Function

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Polycarpus has a sequence, consisting of n non-negative integers: a_1, a_2, \dots, a_n .

Let's define function $f(l, r)$ (l, r are integer, $1 \leq l \leq r \leq n$) for sequence a as an operation of bitwise OR of all the sequence elements with indexes from l to r . Formally: $f(l, r) = a_l | a_{l+1} | \dots | a_r$.

Polycarpus took a piece of paper and wrote out the values of function $f(l, r)$ for all l, r (l, r are integer, $1 \leq l \leq r \leq n$). Now he wants to know, how many **distinct** values he's got in the end.

Help Polycarpus, count the number of distinct values of function $f(l, r)$ for the given sequence a .

Expression $x | y$ means applying the operation of bitwise OR to numbers x and y . This operation exists in all modern programming languages, for example, in language C++ and Java it is marked as "`|`", in *Pascal* — as "`or`".

Input

The first line contains integer n ($1 \leq n \leq 10^5$) — the number of elements of sequence a .

The second line contains n space-separated integers a_1, a_2, \dots, a_n ($0 \leq a_i \leq 10^6$) — the elements of sequence a .

Output

Print a single integer — the number of distinct values of function $f(l, r)$ for the given sequence a .

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

Examples

input
3 1 2 0
output
4

input
10 1 2 3 4 5 6 1 2 9 10
output
11

Note

In the first test case Polycarpus will have 6 numbers written on the paper: $f(1, 1) = 1$, $f(1, 2) = 3$, $f(1, 3) = 3$, $f(2, 2) = 2$, $f(2, 3) = 2$, $f(3, 3) = 0$. There are exactly 4 distinct numbers among them: 0, 1, 2, 3.

→ Attention

Package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then value 800 ms will be displayed and used to determine the verdict.

Codeforces Round #150 (Div. 1)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: Choose File No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit



→ Last submissions

Submission	Time	Verdict
15419905	Jan/18/2016 02:51	Time limit exceeded on test 12
15419902	Jan/18/2016 02:50	Memory limit exceeded on test 12
15419895	Jan/18/2016 02:48	Memory limit exceeded on test 12

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- Announcement 
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